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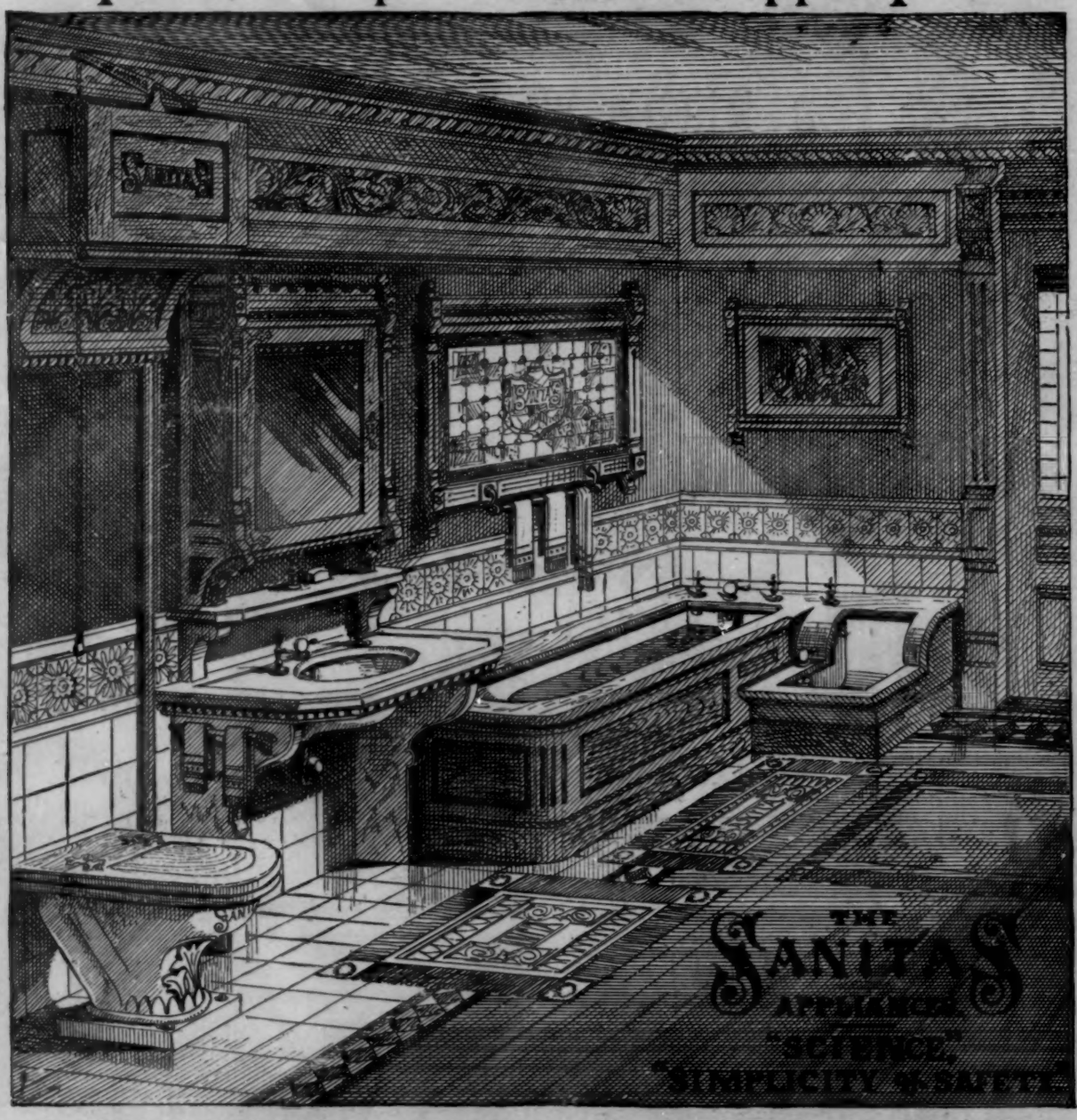
VIEW OF BATH-ROOM FITTED UP WITH THE

SANITAS ✿ PLUMBING ✿ APPLIANCES



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THE competition for the Lowell City-hall and Memorial Library, which interested a good many architects in Massachusetts, has resulted in the award of the first prize to Mr. F. W. Stickney, of Lowell. Mr. Stickney's design is said to have been a very good one, but the principal importance of the matter lies in the fact that it is reported that it will not be carried into execution. The programme of the competition said that "it was expected that if the appropriation for the City-hall was made within a year, the author of the design placed first would be employed to superintend the execution," or words substantially to that effect. Undoubtedly, the sentence did not amount to a positive promise that the author of the design considered best should be appointed architect of the building, but it must have been understood as a virtual promise, or architects of Mr. Stickney's standing would have had nothing to do with the affair, and if he is to meet with the humiliating treatment that common report predicts for him, it seems to us that the Commissioners, some of whom are widely known as men of honor and reputation, can do no less than explain clearly and publicly why they feel obliged to withdraw from a stipulation which undoubtedly did more to attract competitive drawings than anything else in their programme.

ACCORDING to the New York *Times*, the competition for the new cathedral has resulted, so far, in the selection of four designs by the Trustees, followed by the postponement of the whole matter until a committee of experts, comprising two architects and one engineer, shall have examined all the designs *de novo*, and shall have reported upon them to the Trustees. If their judgment shall agree with that of the Trustees, there will be nothing left to do but to declare the result, or to arrange for the second and final competition which is said to have been proposed. If the experts should not agree with the Trustees, we suppose that further discussion will be necessary. Fortunately, there is no great haste about the matter, and the more thought is given to the plans, the more satisfactory will be the final result. According to the *Times*, the choice of the Trustees has fallen upon four Gothic designs, so that the news that the "Gothic style was dead" seems not to have reached them.

EVERY one will regret to hear of the death of the venerable Samuel Carter Hall, F. S. A., who, as "S. C. Hall," attached his name to nearly all the best and most useful work in the way of popularizing the art of architecture which was done in the middle of the present century. His beautiful book, the "*Baronial Halls of England*," is probably the one by which he is best known to architects, but this is only one out of some three hundred and forty books which were either written by him, or published under his care and direction, to say nothing of the innumerable articles which he contributed to the *Art Journal*, which he founded and edited for forty-six years. He was born of a good family and educated as a lawyer. For a time he eked out the scanty income of a young barrister by reporting the debates in Parliament for the newspapers, and from this beginning drifted wholly into literature. At the age of twenty-nine, after one successful literary venture, he succeeded the poet Campbell as editor of the *New Monthly Magazine*, and four years later brought out the first number of the *Art Journal*. This had at first a struggle for existence, and it was many years before he succeeded in bringing it to complete success. In later life he was prominent in public charities in London, and leaves a name which will be long remembered and honored.

IT is a good thing for young architects to have their attention called occasionally to the history of the lives of the more prominent men in the profession, so that they can distinguish for themselves the qualities and habits which lead to the various sorts of rewards, in the shape of honors, riches or selfish pleasures, which form the object of men's ambition. Among the many biographies of the kind which, after the French custom, are published in the professional journals, one of the most interesting is that of Felix Langlais, contributed to *L'Architecture* by M. de Joly. Langlais, one of the best-known architects in Paris, was the son of a soldier. Being naturally strongly inclined to the study of architecture, he was entered as a pupil in the office of Labrouste, and made rapid progress in the art under the tuition of that great man. In his twentieth year, the Revolution of 1848 interrupted his studies, and called him home, where he found himself obliged to take up some active employment to provide a living for himself and others. He was employed first on the works of construction connected with the railway from Paris to Lyons, and was attached, six years later, to the construction of the Exhibition building of 1855. After this he was employed as clerk-of-works upon the public buildings of Paris, and spent several years in the midst of the great building operations which signalized the administration of the Third Napoleon. While engaged in this occupation he found time to do a little business as an architect on his own account, but a regulation was established, forbidding architects employed by the city to undertake any private business, and, finding that he must give up either his public employment or his small private business, he wisely preferred to keep the latter, and resigned his post under the city. He had already built a country-house of some importance in Southwestern France, and was architect to the small Ardennes Railway. A year or two after his retirement from the public service, he was commissioned to build the immense warehouses of Bercy, midway between the Lyons and Orleans railway stations. About the same time, he was engaged to build a house in Paris for the rich family of the Hardons. This house, which was situated on the road to the Bois de Boulogne, attracted the attention of the Rothschilds, who, learning the name of the architect, soon began to bring him commissions. His first work for the family was the enlargement of a house in the Rue Monceaux, built for M. Eugene Pereire, and afterwards sold to Baron Adolphe de Rothschild. This he altered, adding some splendid galleries, and soon afterwards the Baroness Nathaniel de Rothschild entrusted him with the restoration and alteration of the old château of Vaux de Cernay. This work was carried out very successfully, and he built two more country-houses, one for the Baron James-Edward de Rothschild, and the other for Baron Edmund de Rothschild, who also employed him to build a magnificent house in Paris. These various buildings for the Rothschild family attracted the notice of other wealthy persons, and, besides the Hardons, who were almost his first clients, he was employed by the Pereires, the founder, by-the-way, of the Transatlantic Steamship Company, and by many others. The patronage of these wealthy and influential people, with his own prudence, brought him fortune, and he died a rich man, but much more than that, he died so happy in family affection, in the respect and esteem of his associates, and in his charitable, as well as professional occupations, that no one thought about his success in accumulating money. Next to his work

as an architect, and as referee in building cases, which were often assigned to him by the courts, his principal interest was in the improvement of the condition of the working classes, particularly in a moral sense. He was himself a deeply religious man, and, as one means for helping the poor to a better moral state, he engaged actively in the work of the Association for securing the observance of Sunday as a day of rest.

THE Eiffel tower continues to be the hero, so to speak, of various adventures. According to *Le Génie Civil*, which is its official biographer, a story was circulated not long ago in Paris to the effect that it had begun to lean. The outline of the structure makes it very difficult to see whether it is vertical or not, and the rumor spread rapidly, until it came to be asserted that the tower would soon resemble the leaning tower of Pisa, to which it was constantly compared. There was no reason whatever to suppose that any movement had taken place, but the public solicitude became serious enough to make it advisable to have the matter tested, and two engineers were sent with theodolites to make a careful survey. As there are no vertical arrises in the tower, the method of observation employed was to trace the intersection of two vertical planes meeting at right angles in the centre of the tower, and bisecting each face. This was done, and the two theoretical planes were found to divide the faces of the tower with almost perfect symmetry, showing that the shaft was not inclined in any way from the vertical. On three of the sides the curvature was found to be exactly as designed, while the fourth side showed a hollow amounting to about an inch of deviation from the intended line.

IN another affair the tower is the aggressor, instead of being the victim of outside malice. It seems that the structure claims to be a work of art, like a picture or a statue, and to be, therefore, entitled to the benefit of the statutes for the protection of artistic property. Whatever rights of this kind may attach to it have been assigned to a M. Jaluzot, who has undertaken to defend his acquisition by claiming that all persons who sell photographs, models, pictures or representations of any kind of the tower must pay him a royalty on such sales of twenty per cent on the price. As pictures and photographs, to say nothing of models, large and small, in gold, brass, bronze and many other materials, are for sale all over Paris, the royalty would amount to a very substantial sum, and some of the dealers interested have refused to pay, so that the whole question of the right of the structure to the protection accorded to pictures and poems is now before the tribunals, and the result will be awaited with some curiosity.

THE *Sanitary News* quotes from the *British Medical Journal* a description of a simple rough test for arsenic in wall-papers. No apparatus is required beyond a gas-flame, which is to be turned down until it burns entirely blue. A strip of the paper to be tested is then cut off, one-sixteenth of an inch wide, and one or two inches long. As soon as the strip is brought in contact with the exterior of the gas-flame, if arsenic is present, the flame will be colored gray. On taking the strip out of the flame, and holding it, still smoking, to the nose, if arsenic is present the fumes will be found to have the characteristic garlic-like odor of arsenic. After the paper is removed from the flame and has ceased to smoke, the charred end should be examined. If it shows the black of the carbonized fibre covered with a reddish film, and, on placing it a second time in the flame, a green color is produced, copper may be assumed to be present, and, by implication, arsenic, as arseniate of copper is the poisonous pigment to be feared in dangerous wall-papers.

M. MARIETTE gives, in *La Semaine des Constructeurs*, an account of the manufacture of plaster-of-Paris at the quarries near Paris which has a certain value for our architects, who, although they do not employ that material so freely as their brethren across the Atlantic, at least like to know how to tell whether it is of good quality or not. According to him, the best way to try whether plaster-of-Paris, as delivered at a building, is properly burned, is to handle it. If it is underburnt, and therefore likely to give an incoherent, weak hydrate with water, it will feel harsh to the touch, no matter how finely ground it may be. If it is overburnt, it will also feel gritty, but if the burning has been continued just long enough, it will be unctuous and velvety to the touch, and will leave a white spot on the skin. It will surprise many people to learn that the calcination of gypsum may be, and often is, effected at a temperature below the boiling point of water. In fact, the proper temperature for calcination lies between one hundred and seventy-five and two hundred and fifty degrees Fahrenheit, so that the process is rather one of drying than of real calcination. It is, however, effected by burning, a fire being kindled at the bottom of a heap of gypsum blocks, and pushed sufficiently to heat the nearest blocks to redness. These are thus very much overburnt, and the outside pieces are underburnt, but all are ground together, and if the burning has been judiciously managed, the entire product is good. In Paris, the plaster used in building is rather coarsely ground, and is considered stronger in that condition, but plaster for finishing work, as well as that shipped to a distance, is ground very fine, and sifted through a silk bolting-cloth. Among us, plaster is an expensive material, found only in the Maritime Provinces and in the far West, and is used mainly for finishing, and for cementing marble or tiles, but there is a good deal of room for improvement in the manufacture of the American plaster, and architects should not hesitate to demand the best results that the material is capable of furnishing.

AN improvement has recently been introduced into the design of boilers which promises to effect an important economy in the production of steam. An article in *Le Génie Civil*, by M. Lisbonne, a retired director of naval constructions, describes some experiments made with a boiler furnished with tubes having ribs, or flanges, on the inside, so as to present a larger surface for absorbing the heat of the fire. The projection of the flanges is about one-quarter of the diameter of the tube, and eight of them are spaced at equal distances around the inner surface. The tubes, which are the invention of M. Jean Serve, of Gisors, are now drawn by special machinery out of brass, so that they require no soldering, and are strong and easily cleaned. The first experiments with them were made in a steamboat on the Rhone. A boat with copper tubes of the ordinary kind was carefully watched, and it was found that the combustion of one pound of coal would evaporate seven pounds of water, while the temperature of the smoke as it issued from the boiler was six hundred and eighty Fahrenheit. The tubes were then taken out and replaced with M. Serve's tubes, and the evaporation immediately rose to nine and one-third pounds of water for every pound of coal consumed, and the temperature of the escaping gases fell to four hundred and sixty degrees. These results would seem to indicate an economy of about one-third in consumption of coal; and some other experiments, in which the quantity of coal consumed was observed, showed an actual saving of twenty-four per cent in coal. At the naval arsenal in Brest some further tests were then made by officers of the Government, with the result that with natural draught the economy of coal effected by using the flanged tubes in place of smooth ones was, with a given quantity of water evaporated, fourteen per cent, while with forced draught the economy was eighteen per cent.

THE *American Florist* describes a piece of glazing-work which appears to be quite novel, and certainly commends itself to persons who may be in search of original effects in decoration. A florist in Connecticut, having occasion to renew the glazing of his greenhouse, bethought himself that he might save a little money by using for the purpose glass that had already seen service of some sort, instead of buying new. He therefore applied to a photographer of the neighborhood, and made a contract with him for some thousands of old negatives of suitable size for his purpose. The negatives were delivered, and their new proprietor found great satisfaction in arranging them in groups, according to their subjects and other circumstances. The pictures of old gentlemen and ladies he placed by themselves, where they could keep guard together over a certain portion of his plants. Next came the middle-aged persons, sorted in a suitable manner, and lastly the children, smiling in groups in a sunny corner. For the amorous views a special place was reserved, and the pictures of young persons taken hand-in-hand were collected over a heliotrope-bed, which would, it was confidently expected, attain remarkable luxuriance under their influence.

BUILDERS' HARDWARE.[1]—XXIII.

CYLINDER LOCKS.

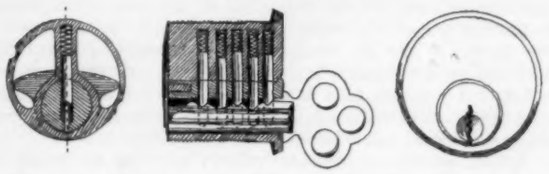


Fig. 336. Mechanism of the Yale Lock. Yale & Towne Mfg. Co.

THE broad and general principle which distinguishes the ordinary lever-lock from the style of lock manufactured under the Yale patents, is that in the latter the mechanism upon which the key directly operates is entirely distinct from the lock itself, being enclosed in a cylinder or escutcheon. The function of the key consists simply in so arranging certain movable pins, slides or other obstructions, that the mechanism is free to rotate, and by its movement, to operate on the locking-bolt. This variety of lock is by no means without a prototype, as we have already seen in the case of the "Egyptian," the "Bramah" and the "Cotterill" locks; but in its application it has been simplified and reduced to a marketable form chiefly in this country, and can be fairly claimed as a product of American ingenuity.

Linus Yale invented the lock which bears his name, about thirty years ago. His original patents covered substantially only the use of a flat key to operate a locking mechanism, a series of vertical pins of unequal lengths being lifted by means of certain ricks or irregularities on the upper edge of the key, so that the ends of the pins were brought on a line. Within recent years an important change has been made in the construction of the Yale escutcheon. The slot through which the key reaches the pins is now cut in sharp corrugations, the key being corrugated longitudinally so as to exactly fit the slot. By this simple device, the "Yale" locks have been rendered practically proof against any but the most expert lock-pickers. The external appearance of the "Yale" lock is presumably familiar to every one, but the internal construction will require some explanation.

Figure 336 shows a cross and a longitudinal section through a typical Yale escutcheon, together with the exposed face of the same. It will readily be seen that the action of the mechanism is very simple. There are two barrels or cylinders, one rotating within the other, but eccentric with it. When the key is withdrawn the lower cylinder is held from rotating by means of five sets of round pins which are fitted in vertical grooves extended partially through the two cylinders, and pressed constantly downward by five bar springs. In each groove are two pins of unequal lengths, one over the other. When the proper key is inserted all the pins are raised simultaneously, but to varying heights, so that the joints between the upper and the lower pins are brought exactly on a line with each other. It is evident that as the inner cylinder, categorically designated as the plug, is exactly fitted to the bore in the shell, an almost imperceptible variation in the height to which any one of the pins is raised, will prevent the plug from turning: whence it follows that an immense number of locks can be made with this mechanism without duplication. From this results the unrivalled capacity of the "Yale" lock for permutations, with its proportionate safety against any accidental interchange of keys.

It will be seen that in this lock the key acts only as an adjuster of the pins. Motion is communicated to the locking-bolt of the lock simply by means of a hub on the back of the rotating plug, or, in the case of a rim-lock, by a flat key extending from the plug through the door. Some of the opponents of this system consider that in it, too much is demanded of the key, but when the locks are otherwise as nicely arranged and evenly balanced as the "Yale & Towne" goods are usually found to be, the amount of twisting strain required to move the bolt is really not a great deal. In no well-made lock should there be any great strain on the key, much less in such a device as this, wherein there are no strong lever-springs to work against.

It will easily be appreciated that this device has almost revolutionized the lock-trade in this country. Not only has it opened the way for many valuable inventions of a similar nature, but it has stimulated the perfecting of the ordinary lever-locks, and was instrumental in the abandoning of the old style of heavy door-keys, so that one's pockets are no longer burdened with such keys as were thought indispensable forty years ago.

The advantages claimed for the Yale lock are as follows:

First, a key of the smallest size and most convenient form.

Second, immense capacity for changes or permutations, so that more thousands of changes are possible than an equal number of dozens with the old systems.[2]

Third, great safety against picking.

Fourth, uniformity of size of the key for locks of all kinds and for all purposes.

Fifth, protection against accidental interchange of keys by reason of the great capacity of the lock for permutations.

In regard to the third point claimed, it must be remembered, however, that with all its security the Yale lock does not offer an exception to the general rule that any lock can be picked which is operated by a key. Still, very few persons have the nicety of touch necessary to raise the pins by means of fine instruments inserted through the key-hole, and bring them exactly to the position necessary for moving the plug. There are experts who claim to be able to open any "Yale" lock which has been made, but for all practical purposes a lock of this sort affords absolute security, as the time required to pick it renders it very unlikely that any thief would be so indiscreet as even to make the attempt.

It will be understood that the zig-zag corrugations extend entirely through the length of the plug. In a measure, this feature prevents any duplicate key from being manufactured by persons not authorized to do so, as it requires very heavy and specially made machinery to produce one of these keys, and unless the corrugations exactly correspond with the lock, the key cannot enter. The plugs are cut by a peculiar form of band-saw specially designed by the manufacturers; and altogether it seems as if every precaution had been thought of which could render the lock more inviolable.

Like a great many other successful inventions, the Yale locks are remarkable for their simplicity. The whole of the mechanism being practically combined in the escutcheon, there is no necessity for any complicated system of levers or springs in the lock proper, and there remains very little to get out of order. The older plugs, made with a straight slot, would allow a certain amount of vertical play to the key, so that it would rock in the cut and would not always exactly lift the pins; besides which the slot permitted the lock to be picked with comparative ease. This is entirely obviated by the corrugated slot, as already explained. It will be noticed also that the lock is not in any way dependent upon the springs, as the pins would act by gravity, even should the springs give out entirely.

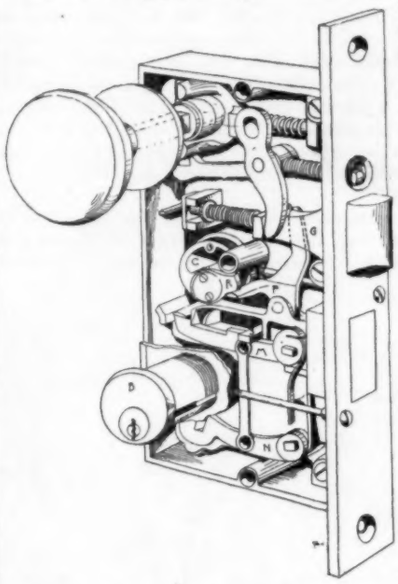


Fig. 337. Yale Front-Door Lock. Yale & Towne Mfg. Co.

It would seem almost an impossibility to master-key a series of Yale lock, and yet it is accomplished in two different ways. The first is to fit each lock with a separate master-escutcheon, practically making a double lock, though both sets of escutcheons act on the same locking-bolt. By this method a million locks could be master-keyed in a single series, if desired. The second way is to use three pins in each slot

[1] Continued from page 148, No. 692.

[2] Assuming that a variation of one-fiftieth of an inch in the length of a pin is sufficient to lock the plug, 267,331,200 locks can be made on this system, no two of which can be operated by the same key.

instead of two, the lengths of the pins being so adjusted that, throughout the series, the upper joints can be brought on a line by the master-key, while the lower jointings are all different, and fitted to the individual room-keys. This method necessitates a larger and more cumbersome plug and cylinder, and is seldom used.

Yale locks are manufactured in all styles and for all purposes, but the escutcheon is always arranged in exactly the same manner, whether intended to operate a night-latch or a desk-lock. The variations consist mainly of differences in the form of the latch or of the lock. A single example will be sufficient to illustrate the whole. Figure 337 represents one of the most perfected forms of Yale front-door lock. *C* and *B* are the two escutcheons, each with a cam, *R*, attached to the back of the plug. *M* and *N* are two levers hinged to the bolt-tail. *L*, *F* is a bent lever, hinged to a flange of the bolt-tail, and catching under a hub on the bolt of the latch. The dead-bolt can be operated from either side, the cams first depressing the levers so as to pass the post, *S*, and then shooting out the bolt in the same manner as with an ordinary key. When the dead-bolt is unlocked the end of the lever *F* takes the position shown by the figure. If the cam *R* is then turned to the left, it so acts on the lever as to cause it to draw back the latch, *G*. Consequently a single key serves both to unlock the dead-bolt and to draw back the latch.

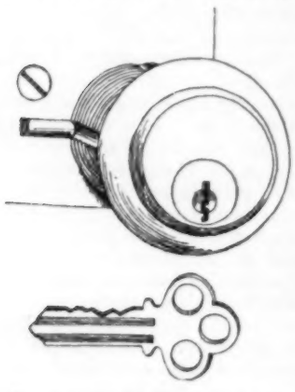


Fig. 338. The Harvard Lock. P. & F. Corbin.

The "Yale" lock has, of course, won for itself a host of imitators in the hardware trade. The closest approach to the "Yale" system is embodied in an escutcheon lock manufactured by P. & F. Corbin. Figure 338 illustrates this. The internal arrangement is exactly the same as in the "Yale" lock, so far as relates to the pins, etc., but the plugs are cut with square-edged, instead of zig-zag slots. These slots, also, are not carried entirely through the plug, but extend only through a thin face-plate, behind which is a wide slot exactly like that of the original "Yale" locks. This seems like an imitation of, but in nowise an improvement on the original, and is considered by the Yale & Towne Manufacturing Company as an infringement on their patents.

Figure 339 illustrates the "Foster" lock, manufactured by A. G. Newman, a very ingeniously devised lock, which is harder to pick than the "Yale," and, as put on the market,

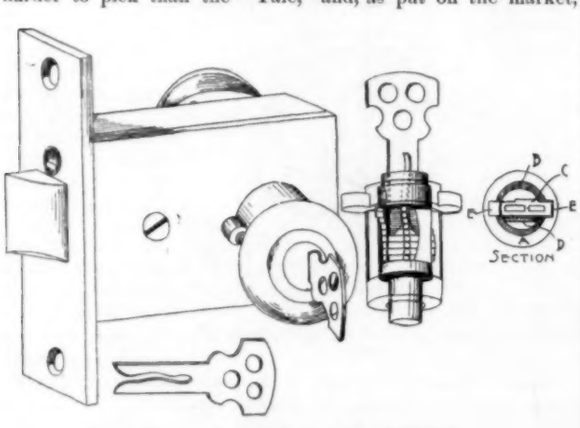


Fig. 339. The Foster Lock. A. G. Newman.

shows the greatest of care in workmanship and finish. The cross-section of the escutcheon shows the internal construction. The outer shell, *A*, is fixed to the lock-case. The plug, *B*, is hollow, and fitted with ten slides *C*, which work through cuts in the side of the plug and catch in slots, *E*, *E*, cut in the shell, so that the plug cannot rotate until the slides are withdrawn. Half of the slides protrude from the plug towards the right and half towards the left; each slide being fitted with a small brass spring, *D*. The key is cut with an irregular cleft, and the slides are cut out, with a cross-piece near the centre. The cross-pieces, and the sinuosities of the cleft in the key are so mutally spaced that when the key is inserted all of the slides are drawn in and the ends no longer protrude but are flush with the surface of the plug, which is then free to rotate. It is believed that this lock is unique of its kind, and, though in outward appearance much like a Yale lock, it is decidedly original in every other respect.

A form of cylinder-lock has recently been put on the market by the Hopkins & Dickinson Manufacturing Company, which partakes somewhat of the nature of the old "Bramah" lock, previously described. Figure 340 illustrates the external appearance as well as the internal construction of the escutcheon or cylinder, whose functions are the same as in the Yale lock. The shell, *A*, is secured to the lock-case so as to be immovable. The plug, *B*, rotates inside of this, being held in place by screws, *C*, turned through the outer shell. Inside of the plug are five slides, *D*, working in a closely fitted groove, with a separate spring to each slide. The springs are on opposite sides, in separate slots, so that there is no chance for the slides to rock. The key is flat, with five notches on the end corresponding to the five slides. It is inserted through a straight slot in a capping-piece, *E*, and bears against the bottom of slots in the centre of the slides. At the back of the plug is a

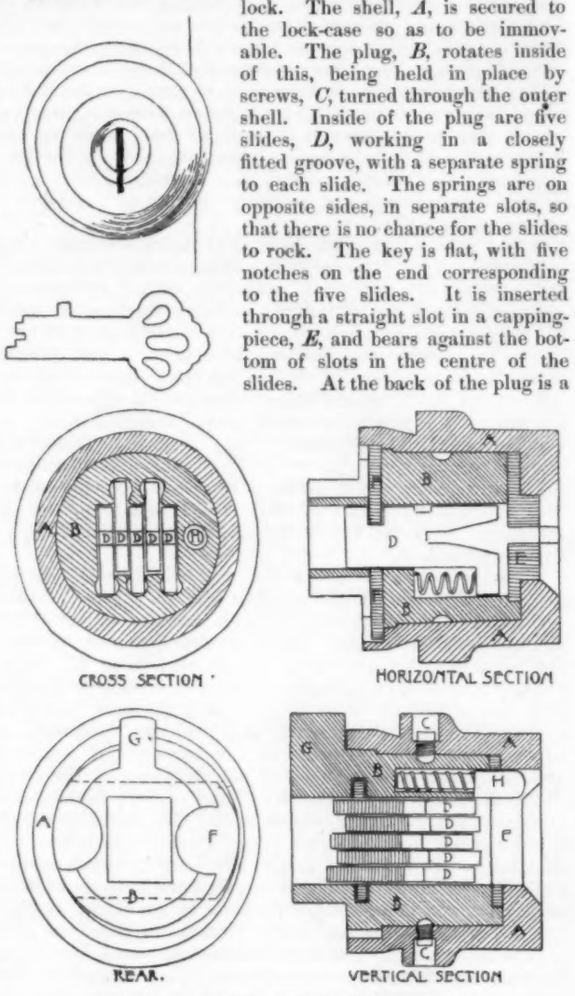


Fig. 340. Cylinder Lock. Hopkins & Dickinson Mfg. Co.

flat piece of metal, known as a fence, *F*, working up and down in grooves, with a hole through the centre sufficiently large to allow the ends of the slides to protrude by it. The top of each slide has one notch in it the same width as the thickness of the fence, at varying distances from the key-hole, besides one or more false notches of lesser depth. The plug is extended with an arm, *G*, by which the lock-bolt is operated.

The mechanism operates as follows: The fence is in the plane of an eccentric groove or ward cut on the back of the shell, as shown by the figure. This eccentric groove is so located with reference to the centre of rotation of the cylinder that when the plug is turned, the longer arm of the fence is forced to one side, the amount of eccentricity being sufficient to firmly wedge and hold the plug, in case the fence should not be free to move laterally. When the key is inserted, a shoulder on it first presses back a pin, *H*, which works in a slot so as to hold the plug and the shell together and prevent accidental rotation. The cuts on the end of the key then force back the slides in such ratio that all the deep notches are

brought exactly on a line with the plane of the fence. The key is then turned, rotating the plug, bringing the fence to bear against the walls of the eccentric groove, and forcing it down into the notches of the slides, these notches being of sufficient depth to allow the fence to entirely follow in the eccentric groove. The arm, *G*, can thus operate on the locking-lever.

The shallow notches on the slides are intended as a safeguard against picking. By turning the plug with a knife blade, the fence can be brought to bear against the slides. Slight inequalities in the width of the slides cannot be avoided, and the widest slide will bind most firmly against the fence, so that by depressing the slides successively with a fine pick one might in time be able to catch all the notches over the fence, and so undo the lock, were it not for the false notches which are so confusing that it is extremely difficult, and for most persons, impossible to pick the lock.

Many improvements have been made in the mechanism of this lock during the past six months, and the most thorough study and care has been given to perfect it in every way. The first samples put on the market were deficient in many respects, but the lock as now offered to the trade is about as perfect in every way as anything of the kind which has thus far come before the public. It has excelled everything except the Yale locks, and indeed there is little that can be said of the "Yale" which does not apply with equal force to the Hopkins & Dickinson cylinder-lock. It is well-made, compact, not liable to get out of order, easily repaired and practically burglar-proof.

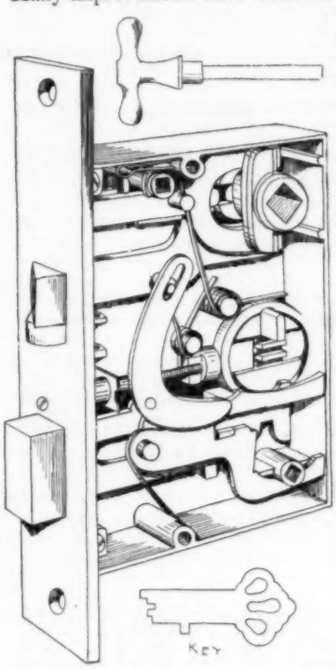


Fig. 341. Cylinder Front-Door Lock. Hopkins & Dickinson Mfg. Co.

Figure 341 illustrates an adaptation of this escutcheon to a front-door lock. The works are ingeniously arranged so that the key will operate both the dead-bolt and the latch, while at the same time the dead-bolt can be shot back by a turn-button and spindle from the inside of the door. The illustration is too clear to require any detailed description. This kind of escutcheon or cylinder can, of course, be applied to any form of lock, though thus far it has been used by the manufacturers only in connection with front-door and office-door locks.

The patents to a very interesting cylinder-lock are controlled by the Yale & Towne Manufacturing Company. The

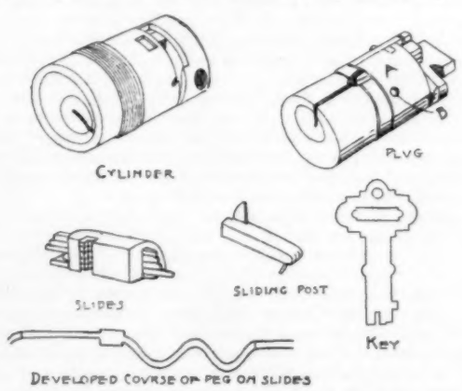


Fig. 342. The Winn Cylinder Lock. Yale & Towne Mfg. Co.

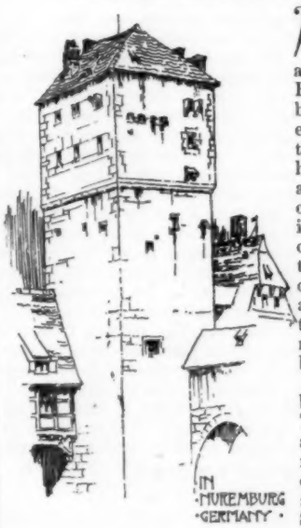
"Winn" lock, Figure 342, is so peculiar in its workings that even after taking it apart it is hard to follow the movements it makes in unlocking. The outer cylinder is secured to the lock-case and to the door, so as to be immovable. Inside of it rotates the plug, a section of which is cut away to allow for a slide-holder, *A*, which is free to move in and out. Inserted in the face of the holder is a pin, *B*, projecting sufficiently to catch in a groove which is cut out from the inner surface of the outer cylinder-barrel, the groove following a waved line, so that when the plug is rotated, the slide-holder is first drawn away from the key-hole, then back, then away again. The slides are flat pieces of steel, one-twelfth inch wide at the ends nearest the key-hole and one-sixth inch at the other, and are each notched on one edge, at varying distances from the end. There is also a sliding-post which passes through the plug behind the slides, which is a little longer than the diameter of the plug, so that one end of the post must project through a short slot in the outer cylinder-barrel. The key, when inserted in the plug, sets the slides by means of the nicks on the end, bringing the slots exactly on a line. The plug being then rotated, the peg, *C*, carries the slides and the slide-holder away from contact with the key, the notches remaining set on a line. After performing a quarter revolution with the plug, the projecting end of the sliding-post encounters an obstacle tending to force it out on the opposite side of the plug, and the notches on the slides being on a line, a fence on the sliding-post slips into the notches, and the plug can continue to rotate. Before a complete revolution is effected, the slides encounter a fixed obstacle which forces them back to their original position, the alignment of the notches being destroyed. The connection between the plug and the bolt of the lock is the same as in all the cylinder-locks.

A little reflection will convince one how futile would be any attempts at picking this lock. The key simply sets the slides and acts as a lever to rotate the plug. The slides are all pointed on the ends towards the key, and a very slight experience is sufficient to show that the lock cannot be picked at all. Indeed, this is the worst thing about it from a commercial point of view, as few people care to have a door-lock so impregnable that the door has to be broken in every time the key is lost.

There are several other styles of cylinder-locks, in which the key operates on levers instead of pins; also several varieties which have much the same appearance as the Yale locks. None of these, however, present any striking peculiarities, and being used more for cabinet work than for doors, they hardly came within the scope of this discussion.

[To be continued.]

THE SEPULCHRE OF AMENEMHAT III.



ABOUT a month ago was reprinted in these columns from the London *Times* an account of the opening of the Hawara Pyramid in the Fayûm by Mr. Petrie, the well-known explorer. News now comes from the same source that Mr. Petrie has succeeded not only in cutting an entrance into the sepulchral chamber of Amenemhat III, but in searching every accessible part of the structure. He has thus turned every fallen block, and cleaned away the sand and mud accumulated during many centuries. The lost secrets of the monument have, in fact, been brought to light.

In the sepulchral chamber had been found two empty sarcophagi. The smaller of these Mr. Petrie at first conjectured to have been made for the King's son and successor, Amenemhat IV, or possibly for the King's daughter, Sebaknefru, who succeeded her brother, Amenemhat IV, and ended the twelfth dynasty. But it now proves, says the writer in the London *Times*, to have been made for another daughter, Princess Ptahnefru, who probably died about the same time as her father, or, at all events, previous to the closing of his pyramid. This Princess is new to history; her name, Ptahnefru, or "the perfections of Ptah," being composed on the same lines as that of her surviving sister, Sebaknefru, or "the perfections of Sebak." A large alabaster vessel, eighteen inches in length, curiously carved in the shape of half a trussed duck, and engraved with a hieroglyphic inscription

signifying "the royal daughter, Ptahnefru," was found in one of the passages a day or two after the opening of the pyramid, and with it three similar vessels, smaller and quite plain.

Two days later, as the work of clearance went on, a superb alabaster table of offerings, surrounded by the broken fragments of nine more alabaster duck vases, was unearthed from beneath the rubbish in a kind of anteroom adjoining the sepulchral chamber. This beautiful work of ancient art is described by Mr. Petrie as "a rectangular block measuring 26½ inches in length, by 17 in breadth and 9 in thickness." It is bordered all round by a funerary invocation of the ordinary type, praying for oblations of food and drink for the "*Ka*" of the royal daughter Ptahnefru; the inclosed surface being carved in low relief with 110 representations of miniature vases, bowls, cups, plates, loaves, cakes, birds, fruits, and the like. Each object has its name engraved beside or above it, thus giving a list of between 70 and 80 varieties of wines, poultry, cakes, etc., and placing us in possession of the complete menu of a royal funerary feast *circa* B. C. 2800. Oddly enough, the ducks, geese, and other birds shown in this interesting list are represented without legs, probably for economy of space. Mr. Petrie says:

"There is a flake off one corner of the block, but it is otherwise as perfect as the day when it was first engraved. It is a lovely monument, new in its details, and new as to the Princess whom it commemorates. It also shows that Ptahnefru must have been the daughter of Amenemhat III, and sister of Sebaknefru. We had a hard job to get it out of the pyramid, as it weighed 400 pounds, and had to be hauled up all sorts of slopes and holes, and twisted round all sorts of corners. Being alabaster, not a rub or a knock could be allowed upon it."

The mummies of the great Pharaoh and his daughter were burned to ashes by the original spoilers of the pyramid, who shall say how many centuries ago? Mr. Petrie carefully cleared out the two sarcophagi with his own hands (both being under water), and found at the bottom of each nothing but a deposit of charcoal mixed with grains of quartz and a quantity of scales of mica. The charcoal showed that the wooden mummy cases and their occupants had been burned, but the quartz grains and mica scales puzzled him sorely. The discovery of a fine lapis-lazuli inlay, carved in the form of a false beard of the kind represented on the chins of gods and Pharaohs, explained the mystery a day or two later. It showed that the destroyed mummy cases had been decorated with mosaic ornamentation in fine stones, which, when calcined, would have produced precisely the residuum found in the charcoal.

The scattered fragments of some six or eight alabaster bowls and vases were also recovered from the rubbish on the flooded floor of the sepulchral chamber. These represent the funerary vessels of the great Pharaoh himself, whose throne-name was found on a fragment fished out of the water when the chamber was first opened. The newly-discovered pieces are mostly inscribed, and, as they are apparently mendable, their legends may once more be read, and will possibly be of historical interest. These fragments, together with an extraordinary number of broken amphoræ of Roman date, complete the brief list of objects discovered inside this pyramid, which it has cost the explorer so much time and labor to open.

The sepulchral chamber of Amenemhat III proves to have had no door and no entrance. The largest sarcophagus must have been placed in position and the smaller one constructed before the whole of the roofing-slabs were laid on, the exit having been closed when the funerary rites were ended by dropping the last slab into its place. As these slabs weigh from forty to fifty tons each, the security of the dead might well be deemed eternal. The presence of the Roman amphoræ shows, however, that the passage from the labyrinth was open in the time of the Cæsars; and it is possible that the pyramid may have remained inviolate up to that period.

How many centuries have elapsed between the raid of the last plunderer and the systematic siege carried on by Mr. Petrie is beyond the reach of conjecture; but it may safely be predicted that the last resting-place of the Labyrinth Pharaoh is not likely to be invaded by many future travellers. Its last treasures being removed, the spoiler will not longer be tempted. Its problem being solved, it offers no enterprise to the man of science. Neither will it long remain accessible to the mere tourist. The passage from the labyrinth will soon be choked again, and its place will be forgotten; and Mr. Petrie's tunnel, which was never very safe, and is now very dangerous, will shortly cave in, if it has not done so already.

In the meanwhile, Mr. Petrie, whose appetite for pyramids seems to grow by what it feeds upon, has removed to Illahûn, there to attack another of these stupendous royal sepulchres, which, according to old tradition and modern report, has never yet been opened.

"Spanish Cedar."—A tall man walking down Chestnut Street, laughingly responded to the inquiry of a friend as to what he was doing: "Sawing Spanish cedar boards in West Virginia for cigar-box makers." To the remark that no Spanish cedar grew in West Virginia he replied: "And not enough anywhere else for the demand. We saw up poplar logs into thin boards, and the cigar makers dye them brown with cedar extract that gives the boxes proper color and odor." The logs are sawn with ribbon-saws that make little sawdust to waste. Nearly all boxes used by American cigar-makers are made from this wood. — *Philadelphia Inquirer.*

The Illustrations

[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

NEW YORK CENTRAL RAILROAD EMPLOYÉS' READING-ROOM, MADISON AVE., NEW YORK, N. Y. MR. R. H. ROBERTSON, ARCHITECT, NEW YORK, N. Y.

[Helio-chrome, issued only with the Imperial Edition.]

GOTHIC SPIRES AND TOWERS, PLATES 42 AND 43.—ST. MARY'S, ILMINSTER; ST. AUGUSTINE'S, HEDON; ST. MARY'S, MALVERN; ALL SAINTS', OAKHAM; SS. MARY AND NICHOLAS, SPALDING; ST. MARY'S, SAINESHEAD.

[Issued only with the Imperial Edition.]

THE AGE OF FRANCIS I, PLATE 5.—CHAMBER OF MARIE DE' MEDICI, BLOIS.

[Issued only with the Imperial Edition.]

COMPETITIVE DESIGN FOR CHRIST CHURCH, NEW YORK, N. Y. MR. R. H. ROBERTSON, ARCHITECT, NEW YORK, N. Y.

GARDEN GATE FOR CURWEN STODDART, ESQ. MR. FRANK MILES DAY, ARCHITECT, PHILADELPHIA, PA.

MISSION CHAPEL FOR EMMANUEL CHURCH, BOSTON, MASS. MESSRS. ROTCH & TILDEN, ARCHITECTS, BOSTON, MASS.

A COUNTRY HOUSE. MR. C. W. STOUGHTON, ARCHITECT, NEW YORK, N. Y.

HOUSE FOR MR. BAKER, DEVON, PA. MR. G. T. PEARSON, ARCHITECT, PHILADELPHIA, PA.

GATE-LODGE FOR G. A. NICKERSON, ESQ., DEDHAM, MASS. MESSRS. LONGFELLOW, ALDEN & HARLOW, ARCHITECTS, BOSTON, MASS.

Baltimore

BALTIMORE AS A BUILDING-CENTRE.—PROPOSED ALTERATIONS IN THE COURT BUILDING.—HOW CITY OFFICIALS DISREGARD PRIVATE RIGHTS.

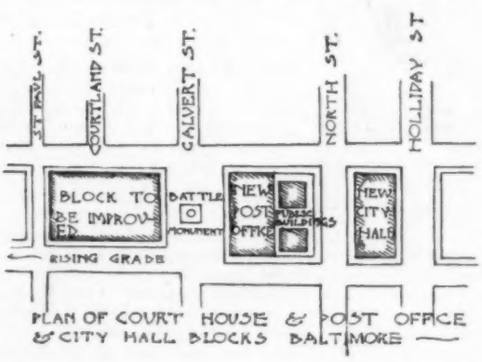
We may not inappropriately deal rather more with mere matters of statistics, as gleaned from the usual official department summaries and journalistic comments—in the first regular letter of the year from Baltimore, than it would perhaps be found interesting to do later on or frequently. Nothing can prove more conclusively how easy it is to compass the ruin of the most enviable reputation, hitherto held quite above suspicion, or upon how frail a foundation the character for veracity may be established, for it becomes only a self-evident proposition that "figures will lie"; and when such statistics touch upon matters of comparative population, bases of taxation, building permits, areas and increase of values, we doubt if even our venerated great national parent himself would prove immaculate, or if the blind goddess would not put a false weight into her scales with the bandages torn from her eyes.

For example, there has been a great deal of local newspaper exultation, during the last month or two, in articles headed "In the Front Rank," etc., over the fact that figures show Baltimore as standing fifth "*in the number of dwellings among the cities of this country*," and that since 1880 she has stood, side by side with St. Louis, first in the list "*in rate of increase in dwellings*" ahead of New York, of Philadelphia, of Boston, of Chicago, etc. But one has no sooner received the impression naturally given by such statements as those we have italicized, when one meets with another tabulated set of facts which, in a list of twenty-six, places Baltimore about sixth in rank in "the number and cost of new buildings," and further states, "It will be observed that *as to the number of operations*, Philadelphia leads every city given by a very large majority." It is perhaps needless to state the locality whence this bit of news

was derived, and from the same source come the following items about real estate in Baltimore: "Sales have fallen off and prices ruled as low as in 1887, much of the depression is attributed to the absence of public spirit and want of economy in public affairs, absence of manufacturing and the large abatement of home capital — the number of new buildings (shows) a falling off of over 1,000, compared with 1887." The force of these remarks is somewhat modified by the fact that they proceed from a town to which many persons, agreeing with our esteemed contemporary *Life*, have not failed to attribute certain Rip-Van-Wrinkle characteristics; also by the fact that during the month in which they appeared, the grain exports of Baltimore are said to have exceeded those of New York and Philadelphia combined, a state of affairs so alarming, that an investigating committee was at once sent to see "what was the matter." It grieved them to discover that the facts were undeniable, and that nothing whatever was the matter.

Certain incongruities in the results to be expected from these data may be explained by the lack of any accurate definition of what the single dwelling-house really means, and by the careless interchange of the "multa" for the "multum." A Baltimore dwelling *may* house comfortably only a half-dozen people, a New York one a hundred or more, the one *may* cost a thousand dollars, the other a hundred thousand. The same comparison holds good for other cities, as illustrated by the fact that from one of the tables quoted above, under the head of number of existing dwellings in 1888, Philadelphia is represented by 146,412, and New York by only 76,684. Truly digits are doubtful, and if we may be permitted a not unclassical form of speech, although they may not absolutely lie about the truths they can get out of statistics, they rarely tell the whole truth about all that lies in them. Baltimore certainly continues to hold her own in her hackneyed reputation as the "city of homes," and in the increase of the small individual dwelling-house, tending, among those showing the hand of an architect, to grow even smaller than formerly; we have not, however, seen any of really satisfactory interior design, or indeed without decidedly objectionable features in the planning, where the width of the lot was less than sixteen or eighteen feet. As to the façades, on the other hand, here and there some intelligent and simple designs stand out conspicuously amid the vast amount of the ordinary builder's foolish conglomerations. Notably a group of quiet white marble fronts on Townsend Street near Charles, and from the same office there is a good bit of simple design, of brownstone and brick, in a single house on St. Paul Street, near the bridge, — barring the galvanized-iron frieze and cornice with details probably designed originally for stone.

Two items of City-hall news have lately excited more or less public interest and comment and give a certain insight into methods of municipal government. The block of ground in the very heart of the city, bounded by Calvert, Fayette, St. Paul and Lexington Streets has for many years been occupied over a large part of its



PLAN OF COURT HOUSE & POST OFFICE & CITY HALL BLOCKS BALTIMORE

area by various court buildings, the most important of which are the old Court-house proper in brick, and of colonial design, and the very severe and massive looking granite Record Office, now old and in many respects inadequate to be sure, but, standing isolated within the same inclosure upon abruptly rising ground separated from each other by a wide open space, they are not without some claim to architectural merit, nor devoid, as a group, of a certain monumental effect and solidity, and the interest of local historic association. For any future improvement of this tract on an extensive scale a most excellent treatment is strongly suggested by the surroundings, rising westward as it does from Battle Monument Square to the east of which about the same area is almost entirely covered by the City-hall and the new Post-office, so that there is possible a very large and effective architectural scheme (in spite of details in the new buildings) extending over four blocks, east and west with the monument itself as a centre. If the plan to be adopted for the future improvement should be only additions and alterations to the old buildings, no less careful consideration and treatment would be required to obtain a harmonious and successful result.

For some years past various indefinite suggestions have been occasionally mentioned for this improvement, but the public were not aware of any actual steps being taken in the matter until a few weeks ago, when the following piece of news appeared in some of the daily papers, accompanied by a ghastly-looking sketch of the proposed building.

"Building Inspector J. Theodore Oster has completed designs for the new Court-house addition, for which $150,000 of the $5,000,000 loan is set aside, and will submit them to the City Council and the Supreme Bench this week, Mr. Oster has designed an ornate and commodious structure with all modern conveniences, and, it is claimed, with sufficient room to accommodate all the judicial machinery of Baltimore for half a century to come: a little architectural ornamentation will give the metamorphosed and re-created structure a handsome appearance. The designs completed by Mr. Oster have been much admired and will probably be adopted with little change." We will add to this the fact that, without questioning in any way Mr. Oster's ability as a building inspector, he has never been known in the community as an architect.

As soon as the matter became generally known and a subject of public comment, one of the more progressive and liberal-minded members of the City Council at once offered a resolution in that body to the effect — that a transaction of such importance to a city should be carried out only with the most careful consideration for the best practical results and architectural effects; that an unpaid commission of five citizens (naming them), well-known for their intelligence and public spirit, should be appointed to carefully consider the whole matter and be empowered to obtain preliminary sketches from architects, with a certain sum — ludicrously small — appropriated for that purpose. This resolution was simply "referred to the committee on ways and means." A numerously signed paper from conspicuous citizens, including nearly every architect in town, was also presented to the City Council, covering about the same ground, and protestating against summary proceedings in such an important matter. The mayor himself is said to have stated that what is proposed at the $150,000 would be at best a temporary and patched-up building, only partially fireproof, which could be erected in about a year, while the greater scheme for entirely new buildings would cost $2,500,000, and would require an enabling act from the legislature and several years for its completion. Having reached this stage the matter quietly went to sleep, or into secret session, and nothing has been heard of it for several weeks.

Another very recent transaction is also something of an illustration of methods of City Government. Upon one of the principal up-town avenues, a main thoroughfare, and one of the widest streets of the city, the property owners extending along two blocks had given an additional fifty feet of their lots to the width of the street, had had the central space curbed and plotted in parkings, and presented the whole to the city. This has became one of the most desirable and attractive locations for residences, and is being rapidly built up as such. A public livery stable firm desired to establish itself on one of the lots opposite this parking. An option, up to a certain date, was obtained on the property from the owner, and the required legal notice published in one of the least important of the daily papers. This being finally discovered, a general protest immediately arose, a hearing was given before the special committee to whom the matter was referred, when every property owner represented most emphatically and unanimously, with strong reasons opposed the permit, with one exception, and that was the man who was selling the property. A protest, signed by a large majority of property-holders in the immediate neighborhood was also sent to the City Council itself. In the face of this very general opposition, based upon the most self-evident grounds, the permit for the erection of the building was given, and the work upon it is now in progress, but the special influences, both direct and indirect, brought to bear upon those in authority in order to obtain the desired end, were not unknown, it is said, to those interested in the matter, and their own line of justifiable opposition was quite powerless against them.

LONDON

THE LAST ACT OF THE METROPOLITAN BOARD OF WORKS. — THE EXAMINATIONS. — THE ATTACK ON ST. MARY-LE-STRAND. — WALL-PAPERS. — CONCRETE-FILLED WALLS. — LORD GRIMTHORPE AND ST. ALBAN'S ABBEY. — PETERBOROUGH CATHEDRAL. — FAMILY PEWS.

ONE would have thought that the recent troubles of the Metropolitan Board of Works would have been a strong incentive to them to pass the last few days of their chequered life in some sort of sober respectability, but it has been decreed otherwise. Bearing in mind the fact that it must dissolve and give place to the new London County Council on April 1, yet, on March 15, almost within a fortnight of its dissolution, in the face of the strongly expressed opinions of the President of the Local Government Board and the Chairman of the London County Council, it actually entered

into a contract for a tunnel under the Thames at Blackwall, costing some hundreds of thousands of pounds, and some fifty thousand pounds in excess of the official estimate. This reckless appropriation of public money, by a body whose life could be counted by days, was really scandalous and very exasperating to the public. Fortunately, the new Local Government Bill gives power to the Government to advance at its discretion the date at which the County Council comes into existence, and Mr. Ritchie, the President of the Local Government Board, has intimated that this extreme step will be taken, and the Board of Works summarily put out of existence before they can hold another meeting to finally seal the contract. If this be done[1], it will be a fitting end to a misspent life. The noble Chairman of the Board has been assuming a degree of hauteur and officialism, which would be mightily amusing were it not so very absurd considering the position in which the Board is placed.

There has been a good deal of discussion here lately upon the question of erecting a new monumental chapel as a sort of Campo Santo at Westminster Abbey. As you know, the hallowed acre where our most illustrious dead rest from their labors, has, unfortunately, become full, and there is hardly a space remaining for fresh interments. A former First Commissioner of Works, Mr. Shaw-Lefevre, is one of the prime movers in the matter, and he published recently in the *Nineteenth Century* his ideas upon the question. This has provoked a storm of opposition, and various other schemes and projects have since been started. Public feeling is, however, very much against any interference with the Abbey, and, I think it very improbable that the idea will bear practical fruit. The most reasonable plan at present is to employ the existing cloisters for burial, for some time at least, and there is very little doubt that this will be the solution of the difficulty.

We are in the throes of another examination for the Associateship of the Royal Institute of British Architects. Between sixty and seventy students have presented themselves, so that the examination is the largest yet held. The new scheme of examination is now under discussion, and it will probably take a form similar to that now in vogue in the other learned professions, *i. e.*, preliminary, intermediate and final. The first of these is a simple schoolboys' examination, but the other two are professional; indeed, the final one will probably be very searching in its nature. Nothing is yet, however, quite definitely settled.

The *Daily Telegraph* continues its attacks on the Church of St. Mary-le-Strand, and a movement is being got up among the tradespeople in the neighborhood to agitate for the removal of the edifice, and, unfortunately, Mr. Augustus Harris and Captain Probyn, the representatives of the Strand Division on the County Council, have bid for popular support, and promised to vote for the destruction of the church. On the other hand, the Architectual Association has unanimously passed the following resolution, and ordered it to be sent to the County Council, the Strand District Board of Works and the Rector of the threatened church:

Resolved, That the Architectural Association views with great regret the agitation for the demolition of the Church of St. Mary-le-Strand, and desires to enter an earnest and emphatic protest against any such demolition, as being not only utterly uncalled for by the requirements of traffic, but also a wanton destruction of one of the finest examples of the work of that eminent architect, James Gibbs, forming with the buildings around it, one of the most beautiful and picturesque architectural groups in London.

The Royal Institute of British Architects has also taken up the question of the destruction of the Church of St. Mary-le-Strand, and I hope that this combined action of the two great professional societies in England may have some influence in getting the County Council to think twice before they commit such an act of vandalism as is proposed.

An extremely interesting paper was read the other night before the Architectural Association, by Mr. A. B. Pite, upon "Wall-papers," and the collection of specimens exhibited illustrated in a striking manner the great advance which popular taste has made during recent years. Perhaps one of the most noticeable features of quite the latest fashion is the immense size of the pattern, which is drawn in bold, flowing curves, and printed in two simple tints, without shading of any kind. Several of Mr. Heaton's masterpieces of design and manipulation were shown, and some were very ingenious and charming in effect, particularly the specimens upon which hand-stencilling had been called in to the assistance of the manufacturer.

A very successful visit of the Architectural Association took place on Saturday to the new Parish Church of St. Mary, Homsey, which I may call one of Mr. James Brooks's most successful efforts. In the course of his explanation, Mr. Brooks stated that he had built the walls of two casings of stone and a filling of Portland cement concrete, in the proportions of seven to one. He claimed that by this method he had saved nearly £1,000 and made a stronger job, and it certainly seems to be a wrinkle worth thinking about.

Public attention has again been called by Lord Lamington in the House of Lords to the state of public buildings in London, but it has elicited nothing further than the usual official rejoinder that the Government has no funds at its disposal. The homeless condition of the National Portrait Gallery, a very valuable collection of portraits, ought to move to pity some of the stony-hearted keepers of the public purse, but it does not; and unless there is a fire, or some other extraordinary occurrence, this gallery will, it seems, have to do without a home. This is only a specimen of the contemptuous manner in which matters architectural are treated in the metropolis of England.

A most curious dispute is proceeding between Lord Grimthorpe, the quondam Sir Edmund Beckett, Q. C., author of a "*Book on Building*," and general self-appointed adviser to the profession generally, and Mr. Henry Hocks Gibbs, a rich city financier, as to who shall repair the Lady Chapel at St. Alban's Abbey. The noble lord, as you know, obtained a faculty some years ago for restoring the Abbey generally, and now wishes to make out that no other person may do anything to the building except himself. The sympathies of the profession are entirely with Mr. Gibbs, and to rescue any part of the once noble old abbey from the hands of a wealthy architectural charlatan like my Lord Grimthorpe would be a boon indeed.

While, however, these two amateur restorers are fighting over St. Alban's Abbey, the restorations at Peterborough Cathedral, which, you remember, were obliged to be done to save the building from ruin, have come to a complete standstill for want of funds. This is a great pity, for Peterborough is one of our *chefs d'œuvre*. Still, it is far better for the restorations to be carried on slowly, in a reverent and conservative spirit, than to be abandoned to the unhappy fate of St. Alban's.

An interesting decision was come to the other day upon the question of family pews. You know that here it is often the custom for single pews to remain in one family for generations, and so a sort of recognized right is, after a time, acquired over these pews. Now these constructions are mostly of a very curious character. Many are like a room, with curtains all round, carpeted and furnished with table and chairs, and what went on inside was more often prated of than seen. This sort of thing, though, does not suit the modern ascetic ecclesiastical clergyman, and the order has gone forth to clear away these old pews and substitute natty oak benches, and this has been the cause of much strife and heart-burning. At last the question has been brought before the higher courts, and the pew-owners have won the victory. The clergy are threatening to take the matter before the House of Lords, our final Court of Appeal, and it will be interesting to watch the case if this is done.

[1] *Later.*—The Metropolitan Board of Works is no more. The Provisional London County Council took the hint of the President of the Local Government Board, and made a formal application to the Government to determine the existence of the Board of Works on Thursday, the 21st inst., to prevent them sealing the contract for the Blackwall Tunnel at their weekly Board meeting on the following day. Mr. Ritchie duly acceded to this request, and issued an edict to the required effect.

: CANADA :

THE ONTARIO PROVINCIAL ASSOCIATION OF ARCHITECTS.—THE PROPOSED ROYAL VICTORIA HOSPITAL AT MONTREAL.—FORMATION OF OTHER ASSOCIATIONS.—THE SHIP-RAILWAY TO BE BUILT.

NOTHING could have been more satisfactory than the inauguration of the Ontario Provincial Association of Architects last month, and the original promoters of the scheme may be very heartily congratulated upon the ready and enthusiastic response made to their invitation from all places in the Province by architects anxious to uphold a movement so thoroughly well calculated to benefit not only the profession, but the public also.

An association of this kind, as was pointed out by the chairman of the meeting, has in no sense the objects of a trades-union or any similar body. By the combination of architects to uphold the dignity of the profession, which object is brought about in various ways and upon definite principles, the public are protected from the adventurous and fraudulent individuals who play upon the credulity of their innocence, and, because there is nothing to prevent them from calling themselves architects, "hang out their shingles" and gull the poor wretches who trust to their fine representations of themselves and their capabilities. "The dignity of the profession" has become to a great many, unhappily, a by-word and a joke, and none are more ready to laugh at the expression than those architects who care so little about their own reputations for professional honor that they will do anything to get hold of work, no matter how small a sum is to be expended upon it. Who would have thought it worth a man's while to draw away a client from a brother architect who was about to design a house to cost $2,500 by declaring that he could do it much better if the client would come to him. Yet that is an actual case. But such dealings as these the members of the Provincial Association rightly scorn. Any member being found guilty of such practice would meet with severe censure from the whole Association.

Under-charging one another is deprecated in the strongest manner, and perhaps this is the most important particular in professional ethics, and one which concerns the public most. If the public want reliable men to carry out their work they must pay the fair market-

price, and they must be taught that the advice and work supplied to them for a less figure than that authorized by a regular scale of charges is not to be relied upon. They are so ignorant that they only argue: So-and-so apparently got what he wanted, and only paid 1¼ per cent for it; why should I pay you five per cent? They little know what a mere blind was the 1¼ per cent, and how, really, they have paid through the nose instead. The following is a good example of one kind of person architects have to deal with sometimes: On hearing that an architect would charge five per cent for a small house, the client remarked that he did not see why he should pay so much, as he understood that amount was the "highest figure ever charged," and he likened the case to that of certain doctors with whom he had lately something to do. He said that recently, when his wife had been confined, he had called in Dr. ——, who had charged him thirty dollars. "Why," says he, "if I had only called in Dr. So-and-so, he, for the same thing, would only have charged *ten dollars*." Perhaps it is needless to say the architect told him he had better take his "job" to a one-and-a-quarter-per-center without further delay.

One of the objects of the Association is to obtain incorporation, and legislation will be sought early with that object in view.

The meeting which was held in the Queen's Hotel, Toronto, numbered some seventy men. The Architectural Guild of Toronto, the original promoters of the scheme, and the representatives of the profession in that city were there in force. Deputations came from Ottawa, Peterborough, Kingston, Hamilton, London, and other places, all of whom, having received copies of the draft Constitution and By-Laws, came prepared to discuss them, and ready with resolutions for their improvement. This had the effect of greatly simplifying the business before the meeting. Mr. Charles Durand, of London, Ontario, was voted to the chair, and he exhibited splendid qualifications for the post. The manner in which he conducted the meeting was deserving of all praise, and, owing to his tact and businesslike management, the meeting was one of the most orderly of its kind that has ever been held. Mr. Langton, of Toronto, acted as Secretary, and to him is due great praise for his indefatigable efforts in bringing about the formation of the Association, together with his colleagues in Committee, who assigned to him the arduous duties of Secretary to the Committee. The professional press was represented by the *Canadian Architect and Builder*, which paper, in the course of the proceedings, was formally declared to be the official organ of the Association.

A good, steady afternoon's work disposed of the Constitution and By-Laws to the satisfaction of all interested, and perhaps not the least subject of satisfaction was the fact that certain men found the objects and sense of the meeting militate against their ideas of the conduct of their business, and disposed of themselves by quietly slipping out, but not, as they hoped, unobserved.

The Directorate of the Association was made as representative as possible, and the following was the unanimous result of the voting on nominations made by a special committee struck at the meeting for that purpose: President, Mr. Storm, of Toronto; First Vice-President, Mr. Arnoldi, of Ottawa; Second Vice-President, Mr. Durand, of London; Third Vice-President, Mr. Balfour, of Hamilton; Directors: Mr. Belcher, of Peterborough; Mr. Burke, of Toronto; Mr. Power, of Kingston; Mr. Mulligan, of Hamilton; Mr. Curry, of Toronto; Treasurer, D. B. Dick, of Toronto; Secretary, S. H. Townsend, of Toronto.

The first annual meeting of the Association is to take place on the third Wednesday of November next, in Toronto.

The Architectural Guild of Toronto invited all the visiting architects, as well as the rest of the architects of Toronto, to dine with them at the Queen's in the evening, and they there sat down, to the number of about sixty, and passed a very pleasant and interesting evening together. Mr. David B. Dick, of Toronto, one of the executive officers of the Guild, took the chair, and at his right hand sat Professor Galbraith of the School of Practical Science, one of the guests who, though not architects, were all much interested in the movement. The Secretary of the Guild read numerous letters from other invited guests who, through previous engagements, were unable to attend, all expressing their sympathy with the objects of the Association. Among these were the Hon. G. W. Ross, Minister of Education, Sir Daniel Wilson, head of the University of Toronto, and the Mayor of Toronto. Speeches followed the dinner on the objects of the Association, the professional training of students, the practical and theoretical sides of the profession, and these were interspersed with songs. Mr. Rastrick, of Hamilton, an aged but worthy member of the profession, formerly a pupil of Sir Charles Barry, and an F. R. I. B. A., told how hard pupils had to work in his days of study — when, in Sir Charles Barry's office, he had to be at his place at seven in the morning, and remain there until eight at night. Many toasts were proposed and heartily responded to, and the guests thanked the Guild very cordially for the sumptuous manner in which they had been entertained, and so ended a day long to be remembered in the annals of the profession in Canada.

Apropos of this subject, I may mention that the Minister of Education has just issued and circulated among those interested his report on the subject of "Technical Education." The Hon. G. W. Ross gives an account of his visit of inspection to the Cornell and Lehigh Universities, Columbia College, the Stevens Institute, Hoboken, and the Massachusetts Institute of Technology, detailing the systems of education and courses of study, giving descriptions of the buildings and the sums expended upon them, and closing his report with an account of the Ontario School of Practical Science, in which he desires to found a chair of architecture; and a report of the meeting he convened last December to ascertain the feelings of representative men, with reference to the establishment of classes for applied chemistry, applied mechanics and architecture.

The Mayor of Montreal has received from Mr. Saxon Snell the plans for the proposed great Royal Victoria Hospital, in that city, the free gift of Sir George Stephens, Bart. and Sir Donald Smith, Knt., a short description of the general arrangements may be of interest: it is a very large group of buildings estimated to cost $556,000, giving accommodation to 348 patients, at a cost of $1,600 per bed. The general plan consists of a central group of four buildings — the nurses' apartments; the clinical department; a building with operating theatres and mortuary, and an ice-house. On each side of the central block are buildings connected with the central block, and with each other by galleries at each floor level; on the left, three buildings, and on the right, two, each four stories high. Staircases connecting the different floors are all outside the building, thus severing connection between the wards themselves. Accommodation is provided for surgical patients, 90 beds; for medical, 180; for private paying patients, 20 beds, and for infectious cases, 35 beds. Verandas are attached to every ward, and all the arrangements are of the very best order. In securing the services of Mr. Saxon Snell whose "forte" is hospitals, the city has taken the wisest possible course, and they will have a hospital than which no finer exists in the world. Particular attention has been paid to the infectious-diseases department: it is situated at a considerable distance from the rest of the buildings, and is constructed on the hut system, divided into three sections for the separate treatment of every kind of disease, and in connection with it are provided rooms for the staff of nurses and doctors and attendants specially devoted to the work of this department.

At the time of writing, Montreal is not yet out of the winter, the ice in the river shows signs of breaking-up, while in Toronto the ice has been gone a week. With the break-up of the ice at Montreal, the inhabitants are on the lookout for floods, through which season they have to pass before they can comfortably settle down to enjoy the spring; but this year they are cheered with the probability of getting it all over early. Navigation opens very irregularly — any day, in fact, between the 30th of March and the 29th of April. An early break-up means a good year for building, for the earlier the frost comes out of the ground, the earlier the new bricks are made — usually it is no joke having to wait till the 15th of June, the day new bricks are ordinarily ready.

The 1st of May, the great day for moving in Montreal, is looming on the horizon, and instigating owners of houses and office-blocks, to use their utmost endeavors to get their unfinished buildings ready for occupation by that day.

A great block for a dry-goods firm, to cost $150,000, has recently been competed for by architects in Montreal. On receipt of the designs (of which there were 10 in number sent in), the owners of the property made a very prompt decision, and returned the other designs without delay. It does not appear that the owners were assisted by any professional referee; but, then, in Montreal they do not understand that kind of thing, and the architects who will not enter into association have to put up with ignominious treatment and take their chances, and then howl at results which are partly their own fault.

Ottawa has established an "Institute of Architects," with Mr. Fuller, the Government Architect, at its head as President; and Hamilton architects have also associated, giving the Presidency to Mr. Rastrick, the "father of that profession," in that town. Both these associations are the outcome of the Toronto Guild's movement, and they are formed with the same objects, in the interest of the profession in each place.

Contractors and master-builders all over the Province of Ontario are agitating with the object of forming an association. Associations seem to be the order-of-the-day, and we may look forward to seeing a very satisfactory state of things before long. Associations of architects, of builders and of workmen, all united in a sort of mutual understanding, and able to meet upon definite and understood grounds for the settlement of all matters of dispute, and for the regulation of the building trades generally.

After closing my letter, I open it to add a postscript on a subject of interest. I see that the projected ship-railway, across the isthmus of Chignecto, Canada, is actually to be commenced. Its object is to save between 500 and 600 miles of sea voyage round Nova Scotia, and small vessels will be enabled to go direct from Chicago *via* the lakes and St. Lawrence River, over the isthmus, and so down to Boston, without the necessity of transhipping their cargoes to more seaworthy vessels. The isthmus now separates the St. Lawrence from the Bay of Fundy. It was first proposed to make a canal, but the cost of $12,000,000 (twelve million dollars), just double what the railway will cost, caused it to be abandoned. Mr. Henry Ketchum is the prime mover in the scheme, and has recently succeeded in placing preference shares on the London market. Messrs. Dawson, Simenes & Usher have the contract. Docks are to be provided at each end, and the vessels to be transported will be raised and lowered on cradles by hydraulic lifts. Locomotives will draw the trucks on which the vessels are placed, which may be loaded up to 1,000 tons burden.

EQUESTRIAN MONUMENTS.[1]—XIV.

THE CONDOTTIERI.

An Old Florentine Cut.

Of the ancient Athenians, Dion Chrysostomus, the golden-mouthed, once said that they used to bestow statues in the same spirit that toys are given to children; that is, in the perfect assurance that sooner or later, for one reason or another, they would be broken and cast aside in favor of newer playthings. This seems to imply that his observation showed that political feeling or the partisans of new and rising sculptors, even in comparatively quiet times, swept out of sight statues of men who had had their day in popular favor. The same remark would probably hold good in all times, but in none more than in the early Renaissance, in those turbulent times when violence and culture travelled in company from one end of Italy to the other, and left their so dissimilar traces everywhere. Sack and rapine make wanton waste, and it may well have been that, besides the famous equestrian statues that survive from that time, others perhaps no less worthy have disappeared and left no trace.

Many well-read men who are perfectly familiar with the names and deeds of the men who made the history of England and France are largely innocent of a similar knowledge of the great names that are sprinkled over the brilliant pages of the history of Italy. In our youth we are taught with infinite particularity the history of ancient Rome, and are even hurried through the tale of the decline of the Roman Empire, so that in later life now and then a name is encountered which has a familiar sound, but not the good, wholesome ring which attends memory's vibrations when one of the grand names of the Classic epoch is encountered. What happened in Italy between the dissipation of the Western Empire and the dawning glories of the early Renaissance few know or care to inquire. We are content to pass over as of too little interest four or five centuries of a people's existence without taking the trouble to inquire what was going on politically, commercially or educationally. To a certain extent chaos reigned for centuries, and the strong hand had to keep each man's head and hearthstone. Armed struggle with domestic and foreign foe was the order of the day, and all cohesion as a nation came to an end — a bourn which was well marked by the disappearance of a common language, as Latin ceased to be spoken about 580, and dialects began to be commonly used. Little chance had the arts of peace in those times, when German hordes poured over the Alps on the one hand, and the Saracens invaded the land on the other. Records are few and imperfect, save in the matter of Papal history, and people are generally willing to take on faith the long chain of slight events that finally restored order, and the superficial student of the history of art is quite ready to pass from the glories of the Empire to the equal glories of the full Renaissance. But even here, though the word and what it stands for is a common household-word, few know what a fascinating field of study the history of the time of the Italian Renaissance really is. There are a few names that are familiar enough — the Medici, the Visconti, the Scalas, and the Doge of Venice as a *genus* are commonly known to readers, and to artists and architects there are other names as familiar, while the traveller's ear recognizes others from their association with the titles of palaces and other buildings he has recently confronted; but the names and deeds of others who play not insignificant parts are quite unknown to most. It is not possible here to give even a sketch of the history of Italy, but, as it is necessary to consider next a series of monuments erected to the honor of men who played brilliant rôles in one of the most stirring of historic periods, it is worth while to try to give some idea of the magnificence of the setting of the scenes amid which these men played out their brief parts.

These splendid pieces of architecture that we accept without inquiry as to the manner of life led by the builders were the result of a great but slowly-developed commercial prosperity[2], which had been largely the direct outcome of the founding of the free cities, by which the rights of the majority were protected, and the great body of the people became a nation of traders. The great families in various ways still managed to secure a lion's share, either by directly engaging in trade, or by success in the never-ending series of petty wars which, even in the most commercially prosperous times, were carried on here or there almost without cessation. The wealth that was thus gathered into the possession of a single noble was absolutely fabulous, and while the nobles of England, France and Germany had to content themselves with bare walls, rush-strewn floors, ungarnished tables and simple fare, the Italian princes of the same period revelled in a luxury of surroundings and furnishings which even these days could hardly match. Thus we read that when the Duke of Clarence, a brother of the Black Prince, was married to a daughter of the Visconti, her marriage portion being five cities and 200,000 gold florins, her father, Galeazzo Visconti, gave a banquet to the two hundred English knights who had accompanied the Duke, and before each course high-born attendants brought in and presented to each guest a valuable gift: "At one time it was a matter of sixty most beautiful horses with trappings of silk and silver; at another plate, hawks, hounds, horse-gear, fine cuirasses, suits of armor fashioned of wrought-steel, helmets adorned with crests, surcoats embroidered with pearls, belts, precious jewels set in gold, and great quantities of cloth of gold and crimson stuff for making raiment. Such was the profusion of this banquet, that the remains taken from the table were enough and to spare for 10,000 men." And a similar feast was held shortly after in honor of the marriage of his son Gian to Isabelle of France.

These were curious times, when it was quite in keeping for such a man as Sigismondo Pandolfo Malatesta, whose family nickname — "Evil head" — fitted him better than it did some others of his race, to kill three wives in quick succession, violate his own daughter, and attempt the chastity of his son as mere incidents in his animal career, while he satisfied the demands of his higher nature by building the Church of San Francisco at Milan, or held long discussions on philosophy and arts and letters with the learned men he had drawn to his court; while Gian Galeazzo Visconti, who killed his own uncle that he might rule undisputed, built the Certosa at Pavia and the Cathedral at Milan.

It was a singular epoch, an age of tyrants — not successive, but many contemporaneous; an age of warfare, of love, of passion and intrigue ending in sudden and violent death; an age of distrust and self-seeking, when the dagger and the subtle poison accomplished what the sword openly unsheathed could not. It was an age of barbarism and yet of magnificence, for, though the leaders were constantly in a state of agitation, there were now and then short periods when a less turbulent prince held the succession, and then the practisers of peaceful vocations had their day, and gathered wealth at every hand, for through it all the greater number of the people clung to peaceful pursuits. So the life of the times was everywhere many-sided, and it was possible for the tyrant, at length sated with conquest, revenge and bloodshed, to seek and find close at hand a society highly cultured in the arts and graces of a rapidly growing civilization. The great cities of the North grew and expanded as fast as those coarser tyrants, like Ezzelino da Romano, were extirpated. This man, had he lived in Classic times, would have to-day with all men a reputation which would put Nero's to the blush, for he had none of Nero's virtues. He was simply callous to all human instincts; his one pleasure was to wring a human being with tortures ineffable. His blood-thirstiness was his one all-absorbing vice; it left no room for passions of more human kind. In Padua alone he had eight prisons, holding more than ten thousand victims, and in them the arm of the executioner had no rest, and it was plied usually in the presence of this monstrous tyrant, one of whose most atrocious acts was his treatment of the inhabitants of Friola, whom, without regard to age or sex, he put beyond the pale of future usefulness by putting out their eyes, and cutting off their noses, arms and legs. The mutilation of his victims was one of his most ordinary practices, and it was at that time the habit of the beggars throughout Italy to excite sympathy by attributing their real or fictitious infirmities to the cruelty of the Veronese tyrant. The death of this monster was typical of his life: overcome at length by a powerful combination formed against him, defeated in battle, and captured sorely wounded, he undid the dressings of his wounds and tore them open, so that he might escape the doom his victors had in store for him.

It seems incredible that during the constant struggles known by name, at least, to all as the wars of the Guelphs and Ghibellines, which lasted nearly four hundred years, and embroiled Southern Germany and nearly all of Italy, that the arts of peace should have made any headway at all, and it is very doubtful if they would if it had not been for the ingenious idea of Frederick II, grandson of Barbarossa, and the last emperor who undertook to govern Italy in person. Being also King of Naples, and being thus brought in contact with the Saracens who had maintained a footing in Naples and Sicily, he conceived the idea of employing them as mercenaries, that is, armed foreigners who, having no ties which connect them with the interests of the people amongst whom they may be placed, may be counted on to execute the orders of their paymaster, no matter what be the moral bearings of the orders imposed. This chance inspiration, and the establishment at Nocera of a colony of Saracen mercenaries, revolutionized the system of warfare in Italy, and made it possible for civilization and chaos to advance hand-in-hand over Italy. From this time [about 1225] onward warfare was carried on mainly by mercenaries, sometimes German or English or Swiss, or Gascon, Breton, Hungarian, or whoever finding life at home too dull cared to take up the adventurous life of the free lance.

These mercenaries, who in English history are known as free lances, or free companions, are in Italian history known as *condottieri*, and played an important part in the fourteenth and fifteenth centuries not only as subsidiary figures, but because not a few of their leaders by force of character, and by taking advantage of their opportunities, rose to positions of great power, and not only temporarily became the rulers of towns and provinces, but succeeded in founding families which were enabled to maintain the titles and powers that had been seized by their plebeian ancestor, and many a noble Italian to-day is as proud of his descent from some rascally foreign freebooter, as English families are of their descent from some man-at-arms who "came over" with the Conqueror.

John Hawkwood, or Giovanni Acuto as he stands in Italian annals,

[1] Continued from No. 694, page 173.

[2] In 1288 there were in Milan, which numbered 200,000 inhabitants, 13,000 private houses, 600 notaries, 200 physicians, 80 schoolmasters, and 50 copyists or writers.

was one of these *condottieri* to whom English romancers, at least, have given a most satisfactory character for unblemished honesty and manly virtue. He is pictured as one of those rough diamonds who, while first of all a soldier, still preserved amid the temptations of a roving life many of the kindly simple virtues of the typical knight. This character was probably not ill-deserved, and he was held in such esteem in his temporarily adopted country that, although he was not honored by the erection of an equestrian monument, the walls of the Cathedral of Sante Maria del Fiore, at Florence, bear a large mural fresco of the doughty Englishman painted by Paolo Uccello. Born in the County of Essex of ignoble parents and bred a tailor, he early abandoned the needle and shears for a nobler cutting instrument, and served under Edward III in the wars in France, and was knighted by the King himself. After the disbanding of the army, Hawkwood joined one of the roving bands of freebooters or White Companions, and entered the service of the Marquis of Monteferrat. In the war between Pisa and Florence, he appears as commander of the Pisan forces, and for the next thirty years he was the leading *condottiere* of his time, serving now the Visconti, now Pope Gregory XI, and at last the Republic of Florence to whom he devoted the last part of his life with such faithfulness that, at his death, he was decreed a public funeral and a monument — perhaps merely the mural decoration above mentioned — was created in his honor. Evidently Giovanni Acuto was not the hero of the legend which relates that a certain northern city, rescued from foreign invaders by a famous *condottiere*, was in consequence overwhelmed with rapturous gratitude toward its deliverer. Nothing within the gift of the city seemed to promise an adequate expression of the honor that ought to be bestowed, and day after day the wisest counsellors of the city sate in vain debate as to what the meed should be. At length a veritable inspiration seized one of them, and he cried out: "Let us kill him, and then worship him as our patron saint." All agreed that the solution was found, and we may fancy with what pagan festivities the unfortunate savior of the city was inducted into immortality. Those who know how common a thing it was for a hired leader who had done such a service to a beleagured city to take advantage of the upheaval to seize the reins of government for his own use and profit, may suspect that the inspired counsellor was a practical joker of rather a grim sort.

John Hawkwood. Painted by Paolo Uccello, S. Maria del Fiore, Florence.

Tolentino. Painted by Andrea del Castagno. S. Maria del Fiore, Florence.

Hallam says: "The name of Sir John Hawkwood is worthy to be remembered as that of the first distinguished commander who had appeared in Europe since the destruction of the Roman Empire. . . . Every contemporary Italian historian speaks with admiration of his skilful tactics in battle, his stratagems, his well-conducted retreats. . . . Hawkwood was not only the greatest, but the last of the foreign *condottieri*, or captains of mercenary bands."

The Cathedral at Florence contains a companion painting of another *condottiere* of a later day, Niccolo Mauruzzo da Tolentino, who, captured by the Milanese, died in captivity in 1434, but the grateful Republic esteemed him no less worthy than Hawkwood of an equestrian portrait, and caused one to be painted by Andrea del Castagno.

The monumental portrait of Hawkwood is interesting, because he is shown in the half-civic garb probably worn on occasions of state, rather than in the full armor of the military commander of the period; the painter by this selection throwing away one of those factitious aids which add so much to the interest we moderns feel in the statues of the full-armored knight. There are no more popular "sights" in Europe than the great gallaries of armor at Madrid, Paris, London, Berlin and elsewhere, and next perhaps to the pleasure that one feels in examining the stuffed figures of knights and horses in full armor, to be found in these galleries, must be counted the pleasure of looking at an armored statute simply because the figure is shown as clad in metal, and not in stuffs.

WEEVER'S "*Ancient Funeral Monuments*," (issued 1631) says, speaking of Hawkwood, "The Italian writers, both Historians and Poets, resound his worthie acts with full mouth. But for my part (to use M. Camden's words) it may suffice to adde unto the rest these foure verses of Julius Feroldus:

> "The glorie prime of Englishmen, then of Italians bold,
> O Hawkwood, and to Italie a sure defensive hold:
> Thy vertue Florence honored sometime with costly Grave,
> And Jovius adornes the same now with a Statue brave."

HAWKWOOD'S DESCENT. — Hawkwood's name was twisted by the Italians into Aucud, Acuto and Aguto, and one Italian historian speaks of him as Giovanni della Guglia, or "John of the needle." By an error on the part of an English writer, who translated "Acutus," the Latin form of his name (on the sarcophagus) as "Sharp" he has frequently been called John Sharp. Bernard Becker, who writes of Hawkwood in "*Adventurous Lives*," and calls him "the type of the free-lance," suggests that this blunder probably explains the whole story about John of the needle, the tailor's son, and so forth. The fact that the manor of Hawkwood has been in existence since the time of King John, throws also a doubt upon the humbleness of his origin. Nevertheless "his name has been put to an absurd book, published in 1687, called '*The Honour of the Taylors; or, The Famous and Renowned History of Sir John Hawkwood, Knight*,' containing his many rare and singular adventures, witty Exploits, heroick Atchievements, and noble performances, etc." Whether he was ever a tailor or not, it is certain that the Merchant-Tailor's Company of London (which was licensed by Edward I), counts him as one of their most renowned members.

PAOLO DI DONO, called Paolo Uccello, from his love of painting birds, was born at Florence in 1397 and in early youth was apprenticed to Lorenzo Ghiberti. It is doubtful from whom he learned to paint, or from whom he acquired the laws of perspective for which he became so famous, although it is known that Manetti taught him geometry. Vasari says that he wasted so much of his time over the study of perspective "that he became more needy than famous." He executed four battlepieces for the Bartolini family, which are wonderful specimens of his thorough knowledge of foreshortening and perspective. One of these is in the Uffizi, another in private hands in Florence, one in the National Gallery and the remaining one in the Louvre. The Louvre also has a panel by him which contains bust portraits of Giotto, Donatello, Brunelleschi, Giovanni Manetti, and himself, as the representatives of painting, sculpture, architecture, mathematics and perspective. His masterpieces are a series of frescos, imitating basreliefs, in the cloisters of Santa Maria Novella. They represent scenes from the book of Genesis. "About the year 1436 he painted in the cathedral at Florence the colossal equestrian portrait of Sir John Hawkwood, the adventurer and soldier. This chiaroscuro painting, which is in terra verde, displays a wonderful power of foreshortening and proportion, and is intended to imitate a stone statue seen aloft standing out from the wall of the church." Genuine works by Uccello are very rare. He died at Florence in 1475. — From Bryan's "*Biographical Dictionary of Painters and Engravers*."

ANDREA DEL CASTAGNO. — Born, probably in Castagno, in 1390. His father was a small proprietor and laborer and Andrea was first stimulated to study art by seeing an itinerant painter at work in a tabernacle. Some of his efforts attracted the attention of Bernardetto de' Medici, who took him to Florence, where he learned to paint. His early life was full of privations. His frescos, many of which have perished, included a series of portraits of celebrated men and women painted for the Villa Pandolfini at Legnaia; the portraits of the fallen leaders of the Peruzzi and Albrizzi factions, in the Palazzo del Podesta at Florence; and several works in the hospital of Santa Maria Nuova. "In 1455 Castagno executed, in imitation of sculpture, the colossal equestrian figure of Niccolo Tolentino, which now hangs in the cathedral close to the colossal figure of Sir John Hawkwood by Uccello, a master whom Castagno approached in style nearer than any other." He died in 1457 at Florence. He is said to have painted in oil, but no work by him in that medium exists. — From Bryan's "*Biographical Dictionary of Painters and Engravers*."

(To be continued.)

NOTES AND CLIPPINGS

BOILER EXPLOSIONS. — The Pittsburgh explosion of a battery of boilers, three out of five exploding according to one report, a somewhat similar explosion in Reading and the Hartford explosion ought, but we fear will not, to lead to a scientific inquiry into the cause of these explosions and more careful legislation for the examination of engineers and the inspection of boilers.

The Coroner's verdict in Hartford concludes that the boiler would not have exploded if the safety-valve had not been fastened down, and assumes, with no direct proof, that the valve was locked to avoid disturbing the guests, as it had done once or twice by blowing off steam. This deduction is based on the fact that the boiler would have stood 105 pounds to the square inch, while the safety-valve was at seventy-five pounds. It is significant, however, that where the rupture occurred there was "no thinning or deterioration; that the break passed through the plates without reference to the seams," that the bottom of the boiler was laid out flat and every tube torn out at both ends. "There was no evidence of local weakness of any kind, nor of low water nor of defects of construction."

In spite of the not unnatural suggestion that the safety-valve was locked, we mistake greatly if the facts do not cause the Hartford explosion to be ranked with a number in which there is plainly some force at work in addition to the steady expansion of steam until the limit of strength in the boiler is passed. Prof. Robert H. Thurston, in a paper read before the Franklin Institute five years ago, pointed out that this force might be furnished by the sudden conversion into steam of superheated water in the boiler by the liberation of a part of the steam by a small rent, a whistle or some like cause. Such an explosion in an experiment made by Mr. B. F. Stevens in 1871 blew up a boiler some time before its tested strength was reached. This force is certain to be most destructive in the ordinary shell boiler, which holds a large amount of water in a single mass, as the Hartford boiler did, ready when the right

conditions come to explode with a force far greater than gunpowder. This theory explains the destructive effect of boiler explosions like that of the "Westfield," which took place with only twenty-five pounds of pressure just as the whistle was sounded. It may give the cause for the recent Pittsburgh explosion, which came just as the whistle was sounded and the steam turned off for an hour given to a meal. The natural moral of this explanation is that "sectional" boilers, in which the water is divided up in smaller masses, ought, as far as possible, to be used in buildings where an explosion will cause great risk to life. At the same time the "case" boiler offers no greater risk where care is taken. When one reflects that the United States has 7,500,000 horse-power scattered among 100,000 to 150,000 stationary boilers, and that in 1887, the last year reported, only 184 of these exploded, 40 per cent in sawmills, the risk is seen to be small. The Pittsburgh explosion recalls the explosion at Friedenshutte, July 25, 1887, when eighteen boilers in a "battery" of twenty-two exploded at midnight, killing twelve and wounding thirty persons. A prolonged inquiry into this disaster, conducted with the usual painstaking care of the Prussian service, failed to make the cause clear, and the conclusion reached was that it was probably due to the explosion of the Bessemer furnace gases used in making steam, which combined in some explosive proportion with the products of coal combustion. As in the Pittsburgh explosion the disaster came at the hour when work was stopped for a meal, it affected boilers which could by no possibility have all had low water at once, and no one can read the reports made on it without feeling, as we said at opening, that there is still much to be learned about some boiler explosions. — *Philadelphia Press.*

Brick for Street Paving. — A Detroit contractor who had occasion to do some work at Burlington, Iowa, has brought to the Michigan metropolis such good opinion of the brick pavement in service at Burlington that Detroit may be induced to experiment with it. If it is a fact that brick pavement, laid at a cost of $2 a square yard, will last from ten to twenty years — and the Detroit contractor says he saw at Burlington one street in excellent condition that had not been disturbed for seventeen years — the paving problem will be carried a long way toward solution. As this pavement is laid at Burlington, the foundation is prepared by levelling and packing the earth: which is then covered with ordinary brick, laid on their sides. These common brick are then covered with a few inches of sand, upon which vitrified brick are laid edgewise, close together, and covered with a light layer of sand. Milwaukee brickmakers can produce excellent hard brick suitable for a test of this pavement, and if it is found on trial that the brick pavement will withstand the wear of heavy teaming, it will be a good substitute for the noisy granite-block pavement which thus far has proved more satisfactory than any other pavement. At any rate, for residence streets, brick pavement would be much preferable to the wooden pavement, which in a few years becomes rank with decay. — *Milwaukee Evening Wisconsin.*

A New Thing in Catalogues. — This new nomenclature was recently adopted at the National Gallery:

OLD STYLE.	NEW.
Michael Angelo.	M. A. Buonarrott.
Francia.	F. Raibolini.
Paolo Veronese.	Caliari.
Titian.	Vecellio.
Giorgione.	Barbarelli.
Correggio.	Allegri.
Caspar Poussin.	Dughet.
Claude.	Gellee.

Complaint has been made against it in the House of Commons. — *London Art Journal.*

The Age of Pulp. — The *Paper-Makers' Circular* (England), says that the new epoch on which we are entering will surely be known as "the age of pulp." Beyond esparto grass, straw and wood, few fibrous substances have as yet practically taken the place once occupied exclusively by rags; but if we should ever exhaust the sources from which we now obtain our supplies, there will assuredly be no lack of substitutes. East Indian ramie, pine-apple fibres, bamboo, bagasse (the refuse matter from sugar-canes), peat, bracken or common fern, flags, rushes, seaweed, tan, and hop-stalks have all been proved capable of yielding pulp. In Scotland hollyhock stems have been made into paper; In Ireland the mallow, red clover, hop vine, and yellow water-iris have been turned to the same use. In Demerara good paper has been made from the plantain. In France a patent has been granted for making paper out of leaves, which have been cut, pressed into cakes, and reduced to pulp by being steeped in lime water.

Bad Drains in London. — It is interesting to note from the eighth annual report of the London Sanitary Protection Association that more than 50 per cent of the drains of our houses are bad. Last year this association inspected 454 houses, and only 22 1-2 per cent of these were in good order; 16 1-2 per cent were in fairly good order; all the rest were either "rather bad," "very bad," or "bad," 35 per cent being of the worst category. As it is by no means the worst class of property that is subjected to the inspection of the Sanitary Protection Association we may take it as an under-statement of the truth that every-other house in London is badly drained. It would have been interesting if the association could have added an estimate of the amount of expenditure that is necessary on an average to put the drains of a house in good condition. At present we can only remember our plumber's "little account," and shudder at the number of millions that would be required to meet the bill. — *Pall Mall Gazette.*

Ruin of Casa Grande. — Friends of the Hemenway exploring expedition will be gratified to know that the Judge civil act contains the following: To enable the secretary of the interior to repair and protect the ruin of Casa Grande, situated in Pinal county, near Florence, Ari., $2,000; and the President is authorized to reserve from settlement and sale the land on which said ruin is situated, and so much of the public land adjacent thereto as in his judgment may be necessary for the protection of said ruin and of the ancient city of which it is a part. — *Boston Herald.*

TRADE SURVEYS

Trade conditions are improving week by week. The volume of business is greater. Demands for material and merchandise of all kinds are increasing. Railroad traffic is heavier and manufacturers are running more cars this month than last. Disemployed labor is being set to work and employment is becoming more abundant, though there is no improvement in wages, or is any probable. Common labor is in more active demand throughout the newer sections of the country than in the older, because of the inauguration of a great deal of new work beginning with the highest construction and railroad work. Railroad-building will probably set in very actively in the summer. So far this year about 15,000 miles of road have been either let to contractors or are in process of completion, and some 53,000 miles of road in all have been projected. This is certainly a surprising and most encouraging exhibit. It means what has heretofore been pointed out, that as soon as railway management can place itself in harmony with public interests new roads will be pushed very rapidly. In New England seven or eight hundred miles are projected in small lines, ranging from five to twenty miles in length. In the Middle States some 5,000 to 7,000 miles are talked of, and nearly all of this mileage will be built in the next five years. Most of the new work is projected in the Western and Southern States. The rail-makers are hereby much pleased at the prospects for full employment later on in the year. Prices are very low for all kinds of iron and steel products. No improvement is likely to show itself till railroad work is entered upon with greater earnestness. Real-estate speculations are very rare. The demand for real-estate for dwelling purposes has seldom been better, particularly in the large cities. In many cities manufacturing sites can scarcely be had. This is the case in Pittsburgh where the manufacturers are compelled to go to the suburbs for room, and this is also true of Cleveland. In Chicago and St. Louis there are more opportunities for manufacturers, but even in these cities and among smaller ones the land is rapidly appreciating in value, and manufacturers are beginning to cast around for where the rate of taxes are more in their favor. This outgoing into smaller cities and towns has heretofore been noticed; the recent developments, however, emphasize this movement. Advices from architects in many sections of the country strengthen the observations recently made on building prospects for the season. Many architects have been engaged for the season in the smaller towns and cities, and are about to superintend building operations there of greater or less magnitude. Architectural ability is being placed before ordinary work. The old-time rule-of-thumb methods are being abandoned, and more confidence is being shown in the wisdom of architects. The younger men among the architects are finding encouragement which has heretofore been denied them. Their sphere is widening by superintending work which is not strictly architectural work, but which helps to round them up as architects, and it is creditable to them to be able to say that such opportunities are not permitted to pass.

The demand for all kinds of building material is better now than even two or three weeks ago, excepting for iron. The demand for structural material will be very heavy for the next two or three months. The use of iron is steadily increasing in large buildings. The tendency seems to be to adopt iron supports instead of timber, or more liberally in conjunction with it than in years past. The structural-iron makers have of late had a good many inquiries from builders for material to be supplied this season. There is also a very active demand for cement, brick machinery for terra-cotta, tile, etc., as well as for timber. The lumber markets of the country show that there is apparently an upward tendency in prices. When this tendency was manifested a month ago it was looked upon by builders and buyers as delusive, and simply a *ruse* of manufacturers and dealers to crowd up prices. It now looks as though the improvement were legitimate. Hemlock is in better demand. Poplar is picked up by wholesalers and retailers, and there is quite a scramble for it in Kentucky and Tennessee. Yellow pine is selling at an advance. Shipments of white pine are bringing equally as good prices as a year ago. Uppers have advanced. Hard woods in general are in good supply, but dealers are taking advantage of the better trade conditions to hold on for a firm price. Stone and slate are held at last year's full prices. A good many quarries have been opened, and, in fact, the spirit of competition has been manifested, and dealers and buyers have been obliged to take cognizance of it. It seems to be the concurrent opinion among a good many architects that this year will be an exceptionally busy one for both ordinary and fine residences. Residents of cities are seeking homes in the suburbs, and this accounts for a large number. A large number of residences costing from $5,000 to $10,000 are being built. Railroad companies will be also large buyers of material; builders of warehouses, terminal facilities, etc. Quite a number of belt-lines are projected. Not a few of them will be undertaken next fall or winter. The outflow of population into the West and South still continues. While new enterprises in the South are greatly magnified by journals interested in calling attention to this section, the fact remains that a great many profitable investments are being made there, and thousands of people are locating themselves where energy will find constant occupation. The smaller industries, with a few exceptions, are all doing well. The anthracite producers have undertaken the heavy task of maintaining last year's prices on coal. The heavy stocks in the Eastern and Western markets are a drag. They have inaugurated a restriction of production. Buyers are hoping that the drop will be made that will bring coal down one dollar per ton, which reduction could easily be affected without injury to the producing interests, according to current commercial opinion, and from the report of the Congressional Committee which investigated the cause of the Reading strike a year or so ago. There is a very active demand for bituminous coal from the Allegheny regions, as well as from Western Pennsylvania and from Ohio and Indiana block-coal regions. There is also a heavy demand for natural-gas for domestic and manufacturing purposes, and new wells are being bored in remote localities from the present well-known sources of supply. The Standard Oil Campany is spreading its territory, and has prevented that development of natural-gas interests which would have taken place but for them.

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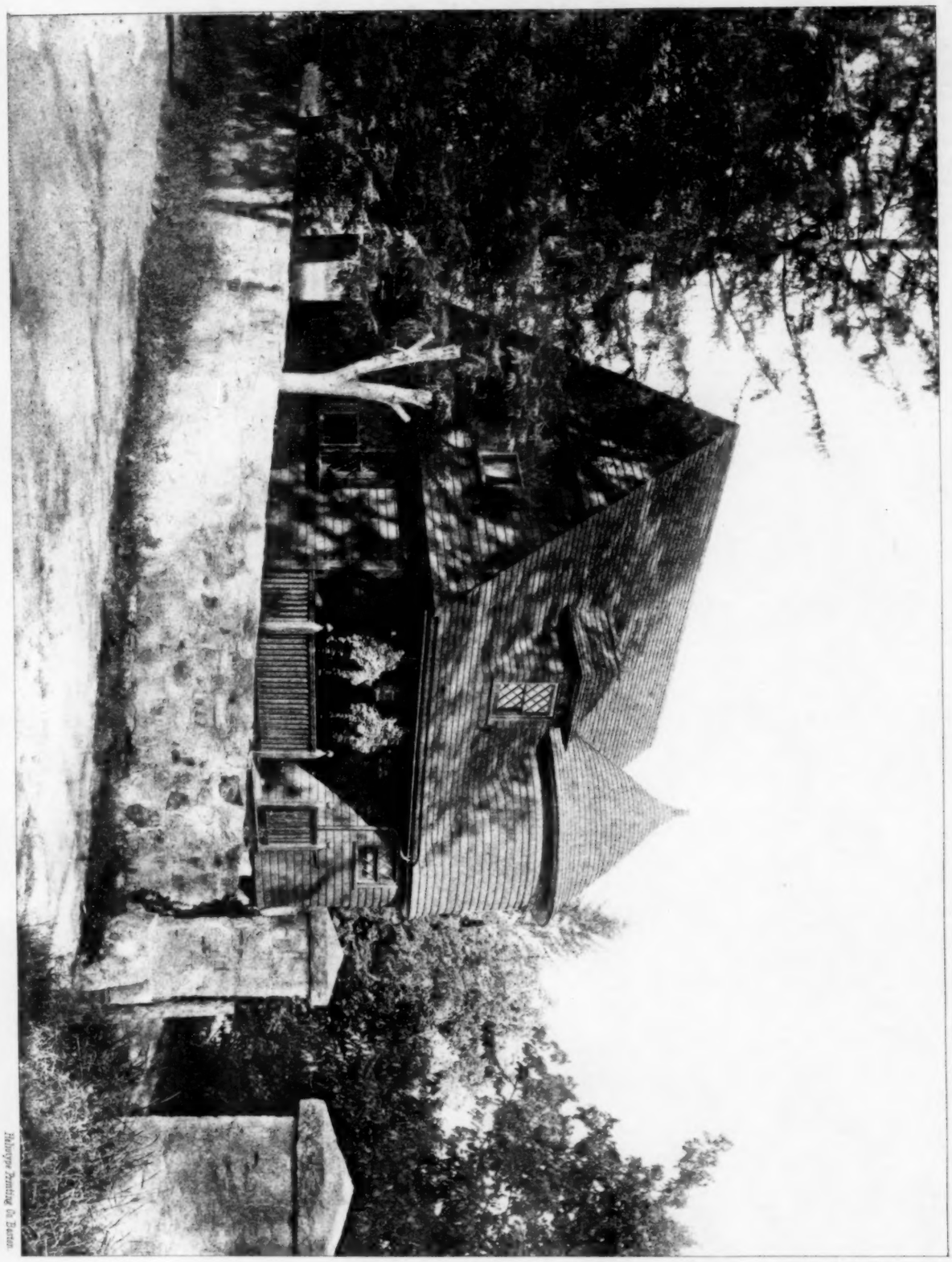

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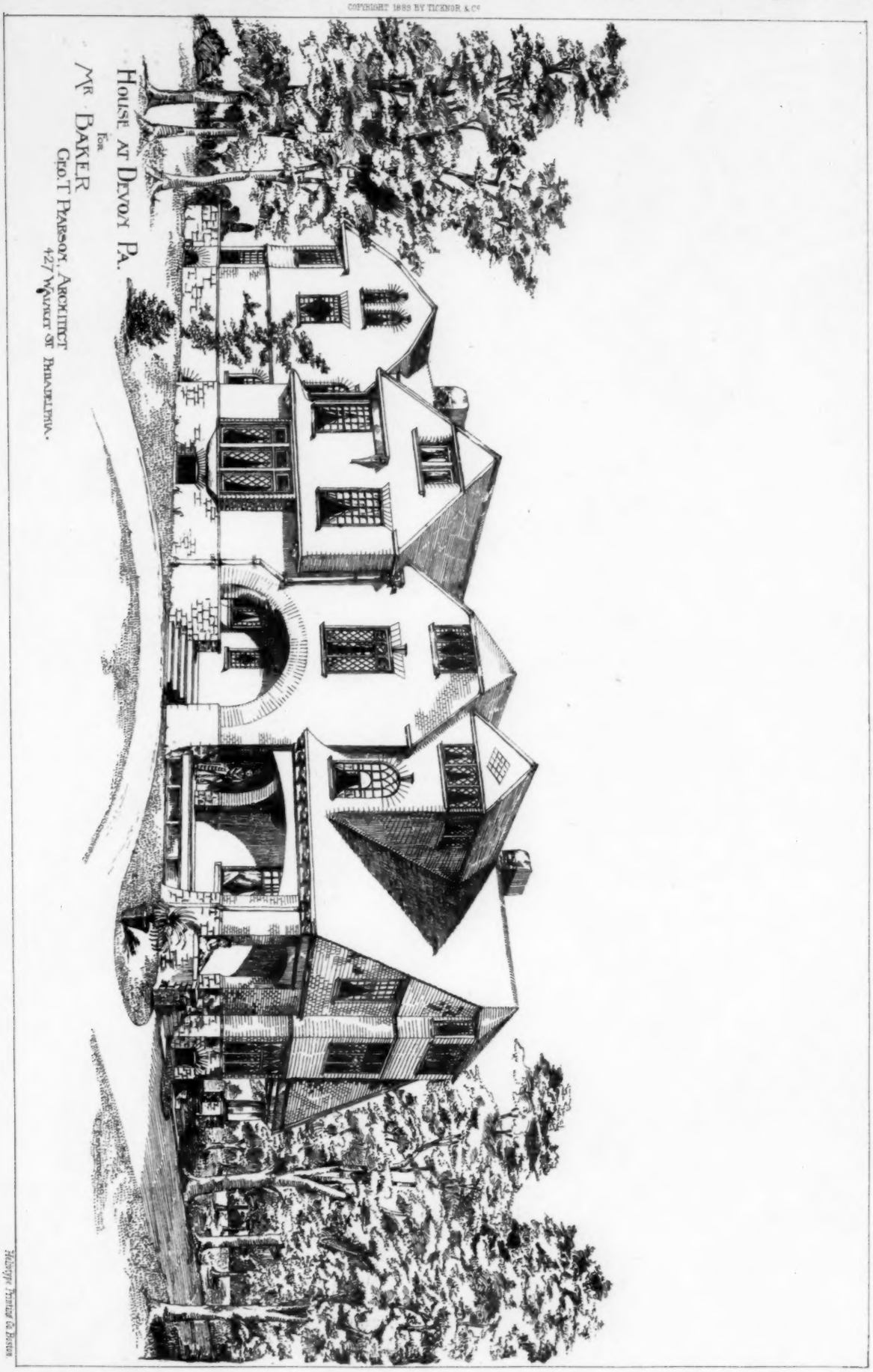

House at Devon Pa.
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Athenæum Chapel for Emmanuel Church, Boston.
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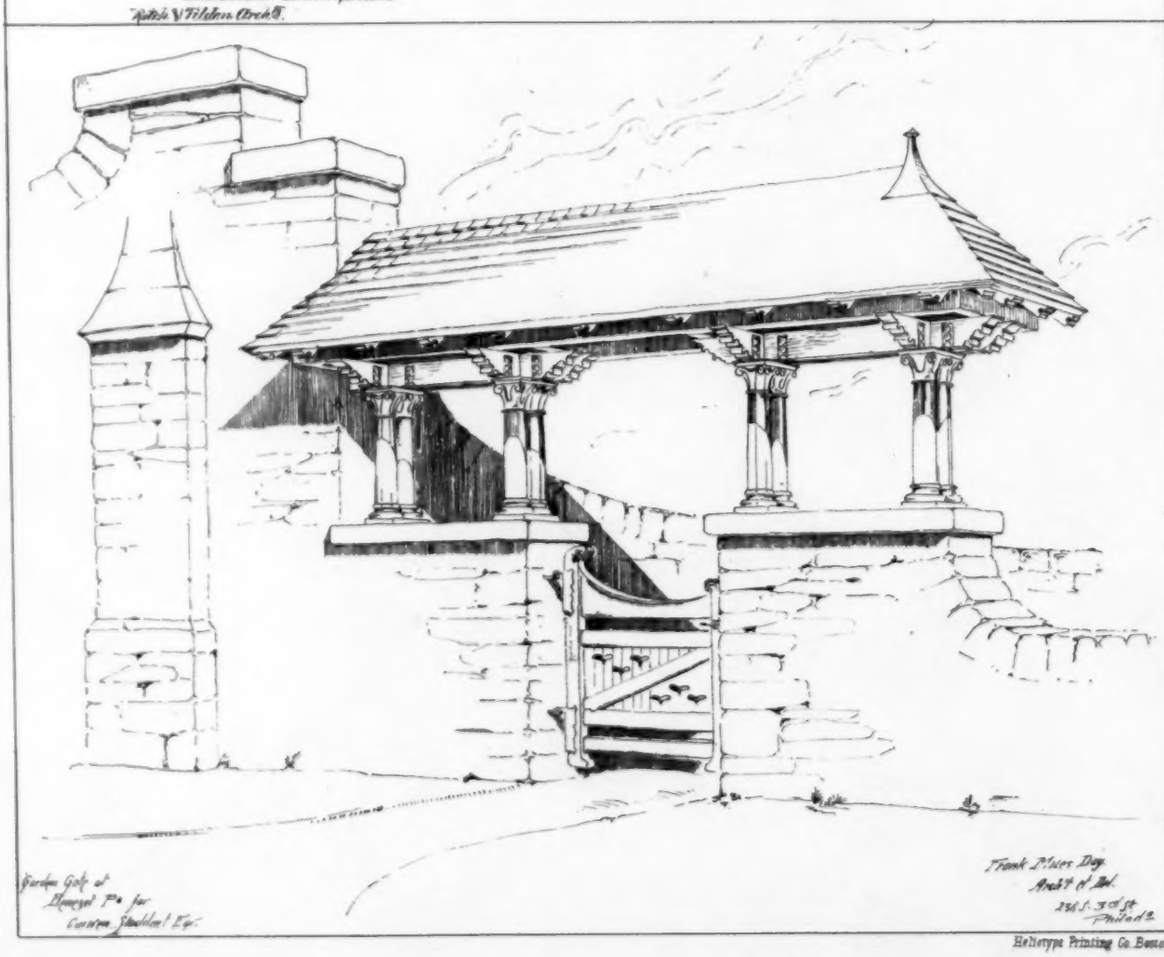

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Frank Miles Day
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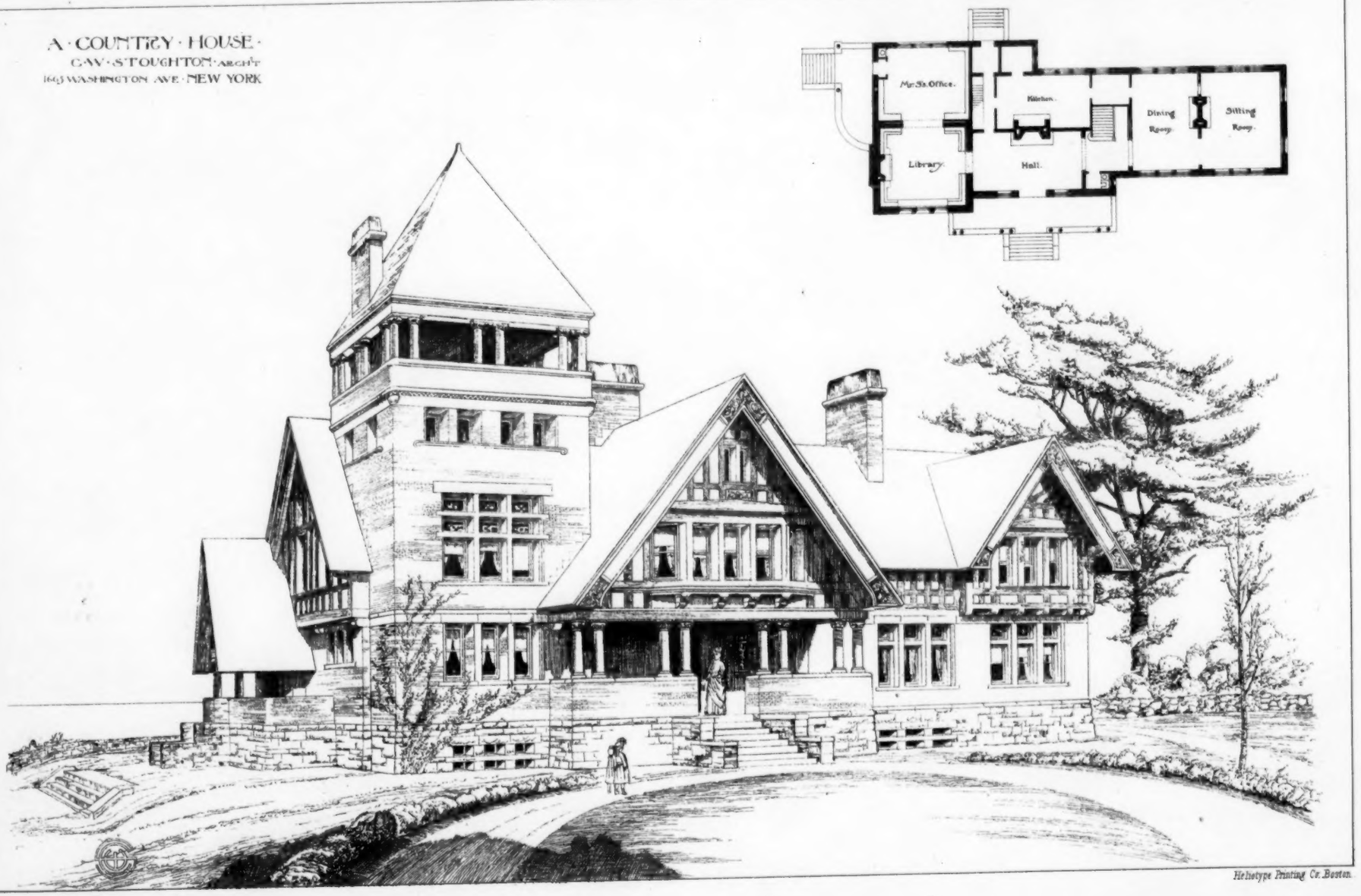

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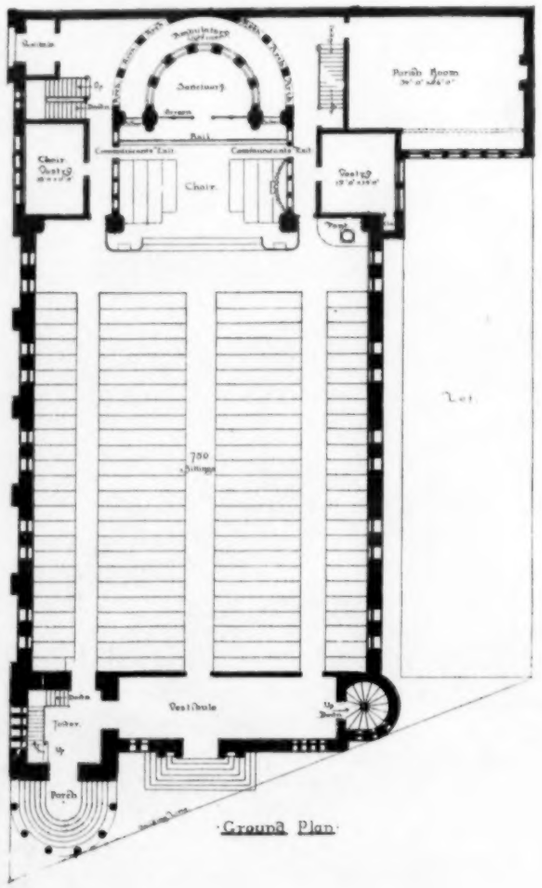
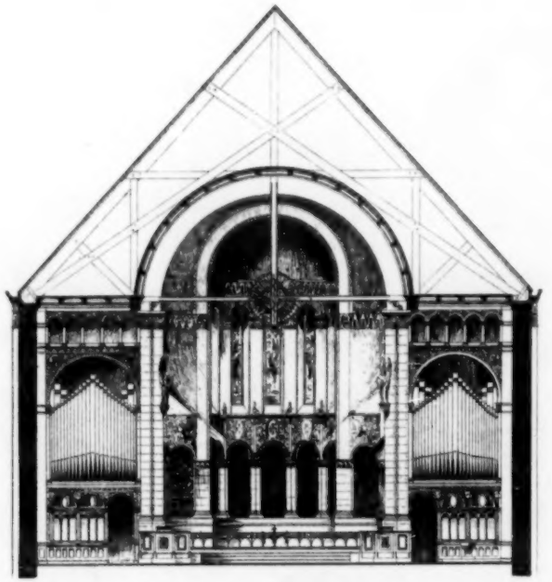


Ground Plan.



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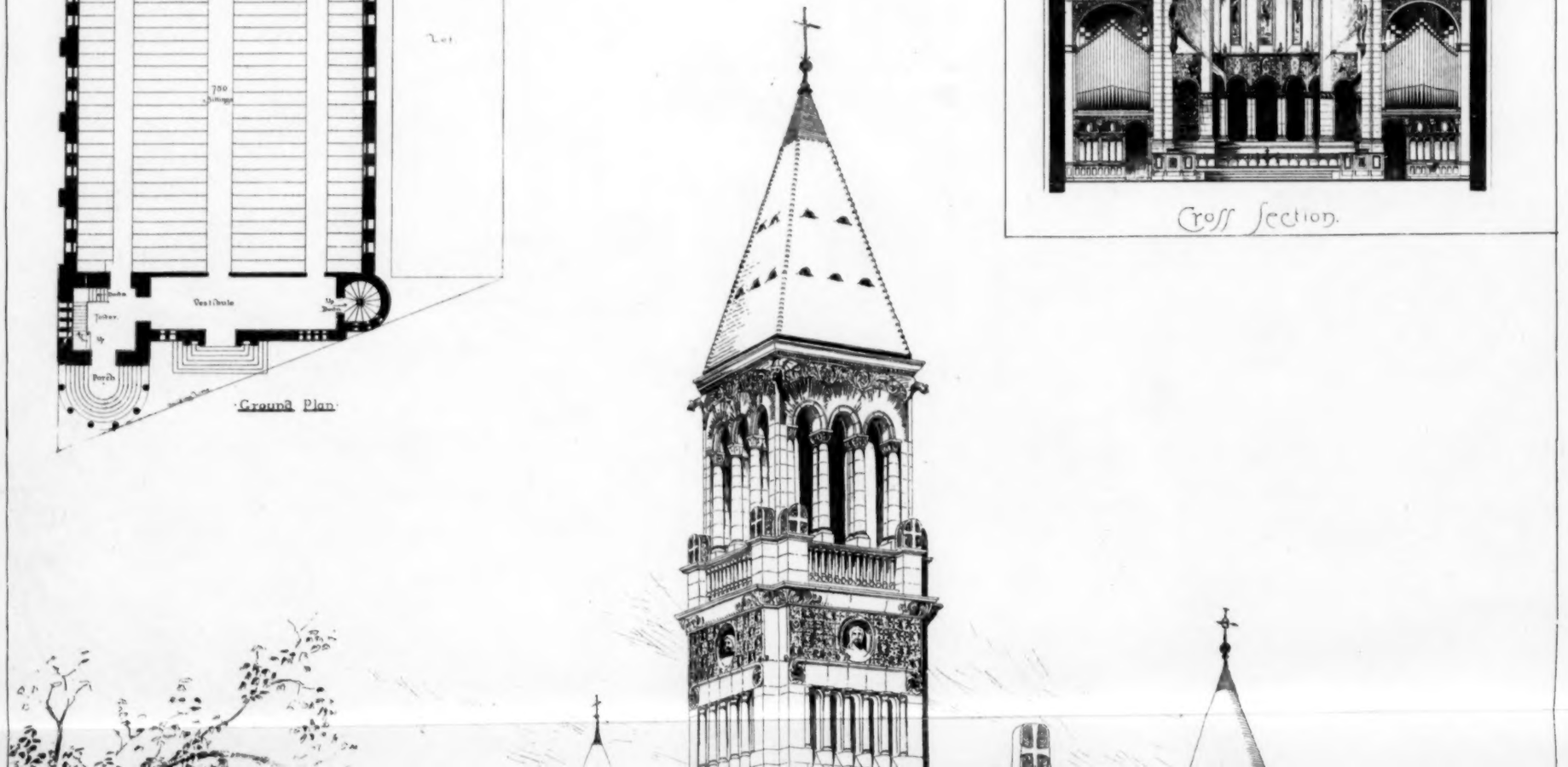

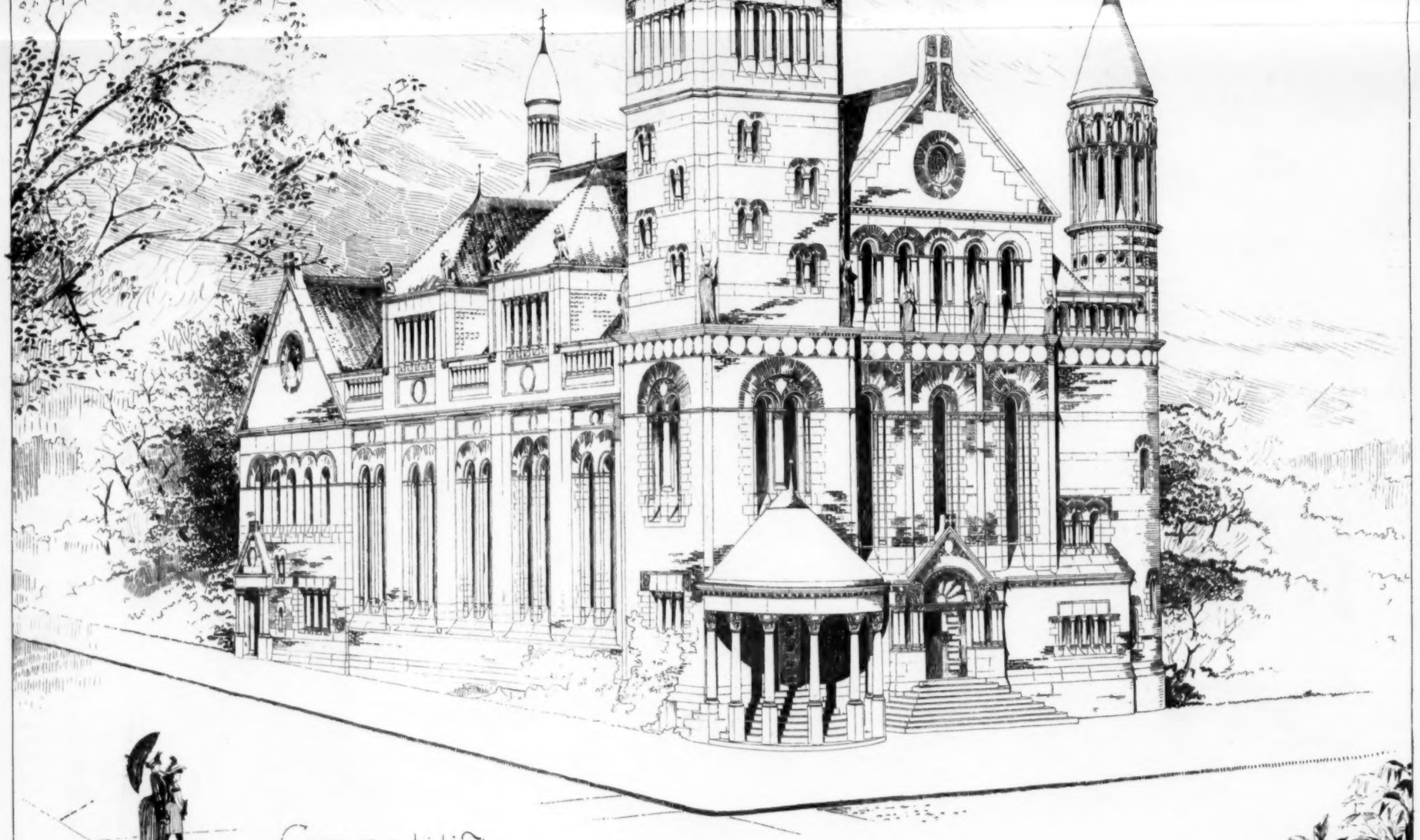

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